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Tres aproximaciones a las Cooperativas de Trabajadores en Uruguay

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Membership Heterogeneity and Workplace democracy

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Abstract

Membership heterogeneity, via collective decision costs, has been signaled as one of the main reasons that can explain the low presence of Worker-managed firms (WMFs) in contemporary capitalist economies. According to this hypothesis, compared to WMFs members, capitalist owners have more homogeneous preferences. While preferences of WMF workers would diverge regarding different issues (wages, amenities, labor conditions, investment project, etc.) depending on personal characteristics (age, sex, wealth, education, etc.). The preferences aggregation process could be complex and the resolution of this conflicts of interests is costly. These costs grow with the heterogeneity of members. The increase of homogeneity among worker-members could be in the set of endogenous measures implemented by WMFs in order to reduce the costs of collective decisions. I use a linked employee-employer data set from Uruguayan social security records over the period 1996-2013 to analyze this subject in two ways. In first place, using wage equations estimates, I consider how the heterogeneity among WMF members on different dimensions (age, sex, and education) affects workers' incomes. Additionally, using duration analysis techniques, I analyze if the deviation of workers characteristics from those prevailing among WMF members affects his or her chances of leaving the firm in the case of the members or become a member in the case of the WMF's employees.

Keywords: labor-managed firms, heterogeneity, duration models, wage differentials

JEL: D23, J52, J54, P13

Introducción

Las Empresas Gestionadas por sus Trabajadores (EGT) han sido destacadas por sus virtudes normativas ya desde el siglo XIX (Mill 1909).¹ Dependiendo de los énfasis de las diferentes corrientes de pensamiento, se han destacado diferentes ventajas de las EGT en comparación a las empresas capitalistas. Se ha señalado que en las cooperativas los trabajadores no serían explotados, estarían menos alienados, estarían más motivados, alcanzarían mayores niveles de autorrealización o permitirían un mayor acceso al capital y una mejor distribución de la riqueza (Dow 2003). Dichas ventajas surgirían del hecho de que en las EGT desaparecería el conflicto de intereses entre empleador y trabajador, los excedentes generados en la empresa serían apropiados por los trabajadores miembros, el trabajador tendría un mayor conocimiento e involucramiento en el proceso productivo de la empresa y que también participaría colectivamente en la toma de decisiones sobre los temas que lo afectan directamente.

Una de las ventajas normativas de las EGT que se ha destacado se vincula a su carácter de organización democrática (Dow 2003). Por un lado, algunos autores han señalado que las EGT generarían externalidades positivas hacia el conjunto de la sociedad en la medida que producen "derrames de cultura democrática" (Pateman 1970, Mason 1982). Por otro lado, también se ha señalado que las empresas, siendo organizaciones sociales de tipo jerárquicas en donde se toman decisiones que afectan a las personas que participan de las mismas, existiría un derecho inalienable de dichas personas a participar democráticamente en la definición de estas decisiones (Dahl 1985). En el único tipo de empresa en la que se realizaría ese derecho sería en las EGT.

A pesar de las mencionadas ventajas normativas, la presencia de EGT en las economías de mercado contemporáneas es particularmente baja. La explicación a esta baja presencia ha atravesado toda la literatura teórica y empírica sobre EGT (ver Pencavel, 2013).

Algunas explicaciones se han enfocado en características intrínsecas de estas empresas, como la determinación del empleo y los salarios (Ward 1958; Domar 1966; Vanek 1970; Steinherr y Thisse 1979; Brewer y Browning 1982), sus decisiones de inversión y

¹ En la literatura económica sobre EGT se utilizan también los términos Empresa Autogestionada y Cooperativa de Trabajadores. En el presente trabajo se considerarán equivalentes.

acumulación de capital (Furubotn y Pejovich 1973; Vanek 1977; Pejovich 1992), la posibilidad de que las cooperativas degeneren en empresas convencionales (Ben-Ner 1984; Miyazaki 1984) o los problemas de incentivos y la presencia de comportamiento oportunistas en los equipos de trabajo (Alchian y Demsetz 1972). Otras explicaciones enfatizan factores externos a la empresa como la eventual discriminación negativa del sistema financiero (Bowles y Gintis 1994).

Entre las características intrínsecas de las EGT que pueden explicar su baja presencia algunas hipótesis se han centrado en los costos de toma de decisiones colectivas en empresas de gestión democrática, siendo uno de los determinantes claves del nivel de dichos costos, la heterogeneidad de sus miembros (Hansmann 1996; Kremer 1997). Por lo tanto, la estructura democrática de las EGT que ha sido señalado como una de sus ventajas normativas, podría ser costosa para estas empresas.

Sin embargo, también existen argumentos para pensar que una mayor heterogeneidad de los miembros de las EGT, podría mejorar su desempeño. En estas empresas quienes realizan las tareas productivas son, al mismo tiempo, quienes conforman el grupo que controla la empresa. Desde este punto de vista, tomadores de decisiones más heterogéneos podrían tomar mejores decisiones cuando se enfrentan a problemas complejos (Pencavel 2013). Por otro lado, la diversidad de los equipos de trabajo puede mejorar su productividad (Hamilton, Nickerson, y Owan 2003). Aunque la existencia de dichas mejoras podría depender del tipo de tarea que se realiza (Ben-Ner, Licht & Park 2017), de la existencia de preferencias homofílicas o el surgimiento de mayores costos de coordinación (Kaiser & Miller 2015).

En este artículo el tema se analizará a partir del análisis comparativo de EGT y Empresas Capitalistas (EC) uruguayas, utilizándose ecuaciones salariales para evaluar el impacto que tiene la heterogeneidad entre los miembros de las EGT en los diferenciales de ingresos observados en las propias EGT en relación a los trabajadores asalariados de EC. Asimismo, utilizaré técnicas de análisis de duración para estudiar la trayectoria y las características de miembros y empelados de las EGT. De este modo, trataré de determinar si el apartamiento de las características de los mismos respecto a las predominantes entre los miembros de la empresa, afecta sus probabilidades de ingresar o abandonar este último grupo. O, dicho de otra manera, estudiaré si los procesos de salida de la empresa o la

transición de los empleados de las EGT al estatus de miembro, colaboran a hacer la empresa más o menos heterogénea.

Los estudios empíricos sobre EGT son relativamente escasos. En la medida que existen aún menos estudios empíricos que busquen estimar el efecto de la heterogeneidad de sus miembros sobre el comportamiento de las EGT, el presente artículo constituye una contribución significativa a dicha literatura.

A nivel más general, este artículo contribuye al análisis de los efectos de heterogeneidad de los miembros de diferentes colectivos o equipos de trabajo sobre el desempeño de los mismos. Desde el punto de vista de las finanzas y la economía pública, es interesante ver como la heterogeneidad de un grupo afecta su desempeño cuando el mismo depende de contribuciones individuales de los miembros (Chan et al. 1999; Cherry, Kroll, y Shogren 2005; Otten et al. 2020) y dicho colectivo mantiene una estructura democrática. El desempeño y la heterogeneidad de los grupos de trabajo también en los debates sobre recursos humanos (Joshi, Liao, y Roh 2011) y en la economía laboral (Niebuhr y Peters 2020; Dale-Olsen y Finseraas 2020; Ozgen 2021).

El objetivo general de este trabajo es contribuir al análisis de las explicaciones a la baja presencia de EGT en las economías contemporáneas. Para ello me propongo responder a las siguientes preguntas: ¿Los trabajadores miembros de EGT tienen más probabilidades de abandonar la empresa si comparten las características predominantes entre los socios de las mismas? ¿Los trabajadores asalariados de EGT tienen más probabilidades de ser admitidos como socios si comparten las características predominantes entre los socios de las mismas? ¿La heterogeneidad entre los miembros de una EGT afecta negativamente su desempeño (considerando los ingresos que obtienen sus miembros)?

Revisión de la literatura

En el modelo de EGT desarrollado por Ward (1958) se consideraba que la función objetivo de estas empresa es el ingreso neto por trabajador, mientras que las EC maximizan sus beneficios globales. Este modelo, así como otros desarrollados posteriormente, supone que los trabajadores de las EGT son homogéneos. Este supuesto

elimina cualquier problema de agregación de preferencias para la toma de decisiones al no existir ningún conflicto de intereses entre trabajadores (Kremer 1997).

Sin embargo, apenas se levanta el supuesto de que todos los trabajadores son idénticos, surge el problema de la agregación de las preferencias. Hansmann (1996) otorga un rol central a los costos de las decisiones colectivas a la hora de explicar la baja presencia de EGT. Según Hansmann, el control de la propiedad de una empresa dependerá de la minimización de los costos de transacción entre la empresa y sus propietarios. Qué actividades se desarrollen dentro de la empresa dependerá de los costos de propiedad y de contratación en el mercado de cada actividad. A su vez, de la minimización de dichos costos dependerá que los dueños de la empresa sean los proveedores de capital, los proveedores de insumos no laborales, los consumidores o los trabajadores.

Entre los costos de propiedad Hansmann destaca, además de los costos que surgen de la necesidad de controlar a los gerentes y de asumir riesgos, los costos de las decisiones colectivas. Estos últimos serían, según el autor la principal desventaja que presentan las EGT frente a las EC. La desventaja sería tal que no se podría compensar con ciertas ventajas comparativas de las EGT que surgirían de una mayor motivación y de la eliminación del comportamiento estratégico entre trabajadores y empleadores. El motivo por el cual las EGT tendrían mayores costos en la toma de decisiones sería la heterogeneidad en las preferencias de sus dueños en función de sus características personales (edad y horizonte de permanencia en la empresa, calificaciones, riqueza, etc.). Dichas diferencias podrían surgir en temas claves como la definición de una escala de remuneraciones o la selección de los proyectos de inversión. En este último caso, tal como plantea Pejovich (1992), los miembros de mayor edad podrían tener una menor preferencia por la reinversión de excedentes. En comparación, los propietarios de capital tienen intereses más homogéneos, en la medida que básicamente buscan maximizar el retorno de sus inversiones.

El nivel de los costos de la toma de decisiones dependerá del mecanismo de decisión elegido, negociación o votación directa. En ambos casos la heterogeneidad de las preferencias es un problema.

En el caso de la negociación todos los miembros deben definir cómo distribuir los excedentes generados por el proyecto en que participan. En estos procesos de discusión pueden surgir diferencias sobre lo que cada miembro considera un resultado justo (Bowles 2004). Asimismo, podrían surgir conflictos cuando existe información asimétrica (Kennan y Wilson 1993). Como resultado de la existencia de estos conflictos pueden surgir ineficiencias que demoren la negociación o directamente la cancelen (aun cuando existiese margen para obtener ganancias beneficiosas para todos) o podrían desviarse recursos hacia actividades no productivas o hacia actividades buscadoras de rentas.

En el caso del mecanismo de votación los costos se relacionan con el tiempo y esfuerzo que los miembros deben dedicar para conocer a la empresa y a los demás miembros, además del tiempo necesario para tejer acuerdos y participar de las reuniones (Hansmann 1996). Además, en el caso de la votación, la regla de votación mayoritaria es vulnerable a problemas de ciclicidad (conocidos como Paradoja de Condorcet). Las propuestas aprobadas en una primera ronda pueden perder en rondas posteriores. El problema del ciclo de votación se da cuando la agregación de las preferencias de los miembros no cumple la propiedad de transitividad. Este marco de inestabilidad podría afectar negativamente las posibilidades de crecimiento de largo plazo de la organización si se vieran modificadas de forma repetida las definiciones de políticas de la empresa. Adicionalmente, podrían producirse mayores costos si los miembros encargados del control de la agenda de votación destinaran recursos para manipular las votaciones (Hansmann 1996).

A diferencia de Hansmann, Kremer (1997) enfatiza que la principal desventaja de utilizar el mecanismo de votación en las EGT no se debe al problema de la ciclicidad, sino a las ineficiencias en la definición de la estructura salarial. Además de los costos asociados al proceso mismo de toma de decisiones, los trabajadores podrían no solo demorar más en tomar decisiones, sino que además podrían tomar “malas” decisiones. Kremer (1997) sostiene que, si el votante mediano está menos calificado que el promedio, la EGT tendrá una estructura salarial relativamente igualitaria que sería inadecuada desde el punto de vista de los incentivos ya que haría difícil el reclutamiento de trabajadores calificados. Sin embargo, la propia potencial salida de los trabajadores más calificados, operaría como una limitación al grado de redistribución interna elegido por la EGT.

Una visión diferente plantean Moene y Wallerstein (1996), que afirman que la utilización de mecanismos de decisiones democráticos harían prevalecer propuestas en las que prime el interés común por sobre las medidas más individualistas.

Según Hansmann (1996), el peso del costo de las decisiones colectivas en las EGT las lleva a adoptar reglas y prácticas que aumenten la homogeneidad de sus miembros. Ejemplos de las mismas serían la reducción de la división del trabajo, la reducción de las diferencias salariales, limitar el alcance de las prácticas democráticas (sustituyendo la democracia directa por la representativa), limitando la agenda, incorporar trabajadores asalariados sin derecho a voto o delegar decisiones importantes en los gerentes contratados.

Benham y Keefe (1991) también plantean que las EGT suelen recurrir a las mencionadas medidas para reducir los costos de las decisiones colectivas. A ellas agregan otras medidas que podrían aplicar las EGT como la selección de nuevos miembros en función de su etnia, religión o ubicación geográfica. Una de las medidas que más destacan es la limitación en el tamaño de la empresa, como otra forma de cuidar la homogeneidad.

El tamaño de la EGT también es destacado por Jones & Kalmi (2012) que consideran la posible existencia de un *trade-off* entre el mantenimiento de las estructuras democráticas de la empresa y la búsqueda de una mayor eficiencia, en particular cuando esa mayor eficiencia se logra a través de la explotación de economías de escala o de alcance. El aumento del tamaño de la empresa implicaría que se implementen modificaciones en la estructura de gobierno de la cooperativa que aumentarían la heterogeneidad entre los miembros de estos emprendimientos. La ampliación del uso de estructuras jerárquicas y representativas afectaría el proceso de toma de decisiones, incrementando las tensiones entre miembros y gerentes o directivos. Con el incremento en la cantidad de categorías de trabajadores al interior de la organización, este proceso llevaría a la generación de grupos de trabajadores con capacidades diferenciales para influir en las decisiones de la cooperativa. Por otro lado, en cooperativas grandes y más heterogéneas los miembros serían más propensos a percibir un débil vínculo común.

Sin embargo, los efectos serían distintos dependiendo de si se tratase de economías de escala de planta o de firma. Solo las del primer tipo produciría los problemas mencionados. Si se tratase de economías de firma, el aumento en el tamaño podría producirse mediante la conformación de conglomerados de EGT (como es el caso de Mondragón en España) cada una de las cuales podrían mantener menores niveles de heterogeneidad.

Sin embargo, hay diversos argumentos que plantean que la heterogeneidad entre los miembros de una EGT también podría tener efectos positivos. Pencavel (2013) plantea que decisores diversos podrían tomar mejores decisiones cuando se enfrentan a problemas complejos. Según Grandori (2016) y Young-Hyman et al (2022) esta heterogeneidad no solo sería positiva para las EGT, sino que este tipo de empresa estaría mejor provista que las EC para gestionar esa heterogeneidad en el caso particular de las industrias intensivas en conocimientos. En estos contextos, las tareas a realizar suelen requerir el trabajo conjunto de personas con especialidades heterogéneas. A la vez que las tareas suelen ser difíciles de definir por adelantado y, si los objetivos no están adecuadamente alineados, se pueden generar costos debido a la interdependencia de las tareas y a que productos particularmente valiosos (como el conocimiento) pueden no ser apropiables. Para este tipo de actividades, una organización en donde sus miembros compartan un conjunto de normas y orientaciones, como las EGT, puede estar mejor provista para encarar este tipo de desafío. Las tareas podrían tener un menor grado de definición previa y el hecho de que los resultados no sean apropiables no sería un impedimento para incentivar un comportamiento adecuado. Siempre y cuando los trabajadores se encuentren motivados por normas y valores generales que provean una guía para dichas tareas.

Por otro lado, una parte de la literatura sobre economía laboral y gestión de recursos humanos, se ha enfocado a analizar los efectos de la heterogeneidad de los equipos de trabajo sobre su desempeño. Sin embargo, los resultados distan de ser uniformes. Algunos trabajos destacan el rol positivo de la existencia de trabajadores con diferentes características al aportar distintos puntos de vista para enfrentar las tareas cotidianas en las empresas (Hamilton, Nickerson, y Owan 2012; 2003). Sin embargo, también podrían existir efectos negativos si surgen mayores problemas de coordinación (Kaiser y Müller 2015). La diversidad cultural tiene efectos poco claros, aunque la mayoría de trabajos encuentran un efecto positivo sobre salarios y productividad a nivel de lugares de trabajo

(Niebuhr y Peters 2020; Dale-Olsen y Finseraas 2020; Ozgen 2021). Por otro lado, la homofilia (McPherson, Smith-Lovin, y Cook 2001) y el gusto por la discriminación (Becker 1971) podrían llevar a que los trabajadores de una EGT prefieran una empresa más homogénea. Aun cuando la diversidad no afecte negativamente la productividad de la empresa. En este sentido Leonard & Levine (2006) y Hirsch et al (2020) encuentran que los trabajadores de empresas convencionales son más proclives a renunciar a los empleos en donde hay menos personas con características similares en términos de edad, sexo, nivel educativo y nacionalidad.

Que los efectos de la heterogeneidad de los equipos de trabajo sobre su productividad sean positivos parecería depender en gran medida de cuál sea la característica que se esté considerando (Joshi, Liao, y Roh 2011) y del tipo de tarea (Ben-Ner, Licht, y Park 2017).

En una revisión sistemática sobre los efectos de la diversidad de los equipos de trabajo sobre su productividad Joshi & Roh (2009) encuentran que la diversidad de atributos demográficos (género, edad, raza/etnia) está negativamente correlacionada con la productividad de los equipo de trabajo. Mientras la diversidad en características “orientadas a las tareas” (antigüedad, educación, ocupación) está correlacionada positivamente. Además, Joshi et al (2011) consideran específicamente el efecto de la diversidad de los equipos gerenciales de la empresa sobre los desempeños de la misma. Encontrando que una mayor diversidad educativa de los gerentes está asociada a una mayor actividad innovadora.

La literatura recién reseñada en su gran mayoría analiza de manera separada los efectos de la heterogeneidad del grupo de decisor de la empresa, de los equipos de trabajo o del equipo gerencial. Sin embargo, en las EGT los tres espacios se superponen. Si bien no todas las personas que trabajan en la empresa integran su grupo decisor, si se cumple que la mayoría lo hace y, además, quienes integran el grupo decisor trabajan en la empresa en su totalidad. Por otro lado, la estructura gerencial y política se superponen (Milnitsky 1992), siendo que muchas veces los gerentes de la empresa son también miembros de la misma. Teniendo los mismos derechos políticos en las asambleas de la empresa para definir las decisiones estratégicas.

La evidencia empírica sobre el tema para las EGT es escasa. Schoening (2010) relata el caso de Burley Design Cooperative en Oregon, creada en la década de los 70, con una estructura salarial igualitaria y donde todos los trabajadores eran socios. A los efectos de evitar una posible tendencia a la degeneración establecieron como regla que a todos los trabajadores asalariados de la empresa se les ofreciera la posibilidad de ser socio luego de trabajar 1500 horas. Esta regla implicó que la EGT se impuso un mecanismo de incorporaciones de nuevos miembros que no tomaba en cuenta las diferencias entre los socios entrantes y los actuales. Según el autor, con el paso de los años la cultura participativa de la empresa se deterioró, así como el proceso de toma de decisiones. En el año 2006 la empresa fue vendida y el nuevo dueño redujo la cantidad de trabajadores a la mitad.

La composición de los miembros de una EGT también ha sido señalada como uno de los factores que pueden explicar los procesos de contratación de mano de obra asalariada y su eventual degeneración (Russell 1984). Russell destaca el papel que pueden tener la heterogeneidad étnica o cultural en los procesos de persistencia o degeneración de las EGT. Analizando los casos de cooperativas de San Francisco y Los Ángeles en EEUU, afirma que la existencia de similitudes culturales o étnicas entre los miembros actuales y los miembros entrantes facilitará la permanencia de la organización cooperativa como tal. Como contracara un cambio en la composición de los miembros de una EGT por la incorporación de nuevos socios cultural o étnicamente diferentes, podrá favorecer el desarrollo de un proceso de degeneración de la empresa como organización cooperativa.

Kalmi (2004) específicamente analiza el rol que pueden cumplir los costos de las decisiones colectivas como determinantes del número de miembros a partir del estudio de caso para 5 empresas de Estonia con datos de 1999. Kalmi considera la evolución de diferentes empresas durante la transición, que vivió Estonia, desde una economía centralmente planificada a una economía de mercado capitalista. Se incluyen en la muestra empresas con formas jurídicas diferentes, pero con la característica común de incluir todas diferentes grados y formas de participación de los trabajadores en la propiedad y gestión de las empresas. A partir de dicho análisis encuentra evidencia de una caída del número de socios, concentración de la propiedad de las empresas en menos personas y que los costos de las decisiones colectivas influyeron negativamente en las probabilidades de que aumente el número de miembros.

Varios trabajos empíricos han encontrado que las EGT suelen aplicar estructuras salariales más igualitarias, tanto en las cooperativas del grupo Mondragón, como en las cooperativas madereras del noroeste de Estados Unidos, en la Lega italiana, en las EGT Uruguayas o en los Kibbutzim de Israel (Dow 2003; Abramitzky 2008; Burdín 2016). Adicionalmente para Uruguay se ha encontrado que los trabajadores de las EGT suelen tener características más homogéneas en comparación con sus contrapartes en EC tanto en la edad de sus miembros como en su nivel educativo (Dean 2014). A esto se agrega que tienen menos personas dedicadas a actividades de supervisión y realizan una mayor rotación de tareas e integración de funciones (Alves et al. 2012; Burdín 2016).

Más recientemente un conjunto de artículos han analizado el impacto que tienen las estructuras salariales internas más igualitarias en las EGT sobre su capacidad para reclutar y retener a los trabajadores más calificados. Tanto Abramitzky (2008), para el caso de los Kibbutzim en Israel, como Burdín (2016) para las EGT uruguayas, encuentran evidencia que las estructuras salariales más igualitarias tuvieron como consecuencia una importante dificultad para retener y reclutar a este tipo de trabajadores. Adicionalmente, Abramitzky (2011) señala que los Kibbutzim aplicaron estrictos procesos de selección con el objetivo de reclutar miembros con productividades esperadas más homogéneas.

La contratación de mano de obra asalariada podría ser un mecanismo utilizado por las EGT si necesitan aumentar el tamaño de la empresa, sin aumentar el tamaño y composición del grupo tomador de decisiones. Sin embargo, en el análisis que realiza Dean (2019) de los determinantes de la contratación de asalariados en las EGT uruguayas, no se encuentra una relación significativa entre la heterogeneidad de calificaciones, sexo y edad entre los miembros y el proceso de sustitución de miembros por empleados.

Por último Young-Hyman, Magne & Kruse (2022), utilizando un panel de registros administrativos de empresas francesas, encuentran un diferencial positivo en el desempeño de las EGT cuando se compara su productividad con la de las EC en ramas intensivas en conocimientos. No encontrando diferencias significativas en las demás reamas.

Datos y Metodología

Se utilizarán los registros del instituto de la seguridad social uruguay (Banco de Previsión Social [BPS]). Dichos registros incluyen en primer lugar, un panel desbalanceado del universo de trabajadores de cooperativas uruguayas registradas en la seguridad social. Incluye más de 1.2 millones de observaciones mensuales correspondientes 30,743 trabajadores y 526 Cooperativas de Producción (CP). La base de datos reporta información mensual de los trabajadores: remuneraciones (en el caso de los miembros las mismas incluyen distribución de dividendos), sexo, edad, antigüedad en la empresa y vínculo con la empresa (si es propietario o empleado). Asimismo, incluyen información de la empresa en la que se desempeña el trabajador, como ser la cantidad de ocupados, la forma jurídica y la rama de actividad (CIU, Rev. 4 a 5 dígitos). Los datos corresponden al período abril 1996 - diciembre 2013. También se dispone del consiguiente grupo de comparación para el mismo período, esto es una muestra aleatoria de 200.000 trabajadores registrados en el BPS (más de 20 millones de observaciones). La muestra es representativa de todos los trabajadores formales de Uruguay (incluyendo todas las ramas de actividad y las formas jurídicas de las organizaciones en las que trabajaron). Por último, los registros de HLL también incluyen para el mismo período una muestra del 20% de las empresas registradas en la seguridad social (más de 50 millones de observaciones de 205.000 empresas), incorporando los datos de la totalidad de sus trabajadores. La inclusión de esta tercera base se debe a que la muestra de 200.000 trabajadores, si bien contiene información de las empresas en donde trabajan, no es representativa de las empresas uruguayas al estar sesgada hacia las empresas más grandes. La principal ventaja de los datos es que es posible matchear la información correspondiente a los trabajadores con la correspondiente a las empresas. Por lo que la estructura de los datos es la de un panel con datos vinculados empleado-empleador. En la base de datos se pueden distinguir renuncias voluntarias de separaciones debidas a otras razones (como despidos, jubilaciones o muertes).

Si bien las características más relevantes de las EGT están fijadas por la ley, estas empresas eligen sus reglas de funcionamiento en una amplia gama de temas. Las EGT tienen que tener una asamblea general que elige a la comisión directiva. Esta a su vez elige a los gerentes y supervisa el funcionamiento cotidiano. Cada trabajador tiene un solo voto, independientemente de su contribución de capital. Los activos de las empresas

pueden ser de propiedad individual o colectiva de los miembros de la EGT. En caso de estar organizada bajo la forma de propiedad individual, los miembros pueden vender su participación en el mercado. Bajo la forma de propiedad colectiva, los miembros no poseen participaciones comercializables. Sin embargo, en el caso de Uruguay menos del 10% de las EGT funcionan bajo un esquema de propiedad individual (Alves et al 2012). No hay diferencias en el tratamiento que hace el régimen tributario uruguayo entre los trabajadores-miembros de las EGT y los trabajadores asalariados de EC.

La distinción entre una EGT y una empresa capitalista parece obvia. Intuitivamente, la primera es una empresa donde los trabajadores son los dueños de los medios de producción, participan de la gestión de la empresa y del control de las decisiones económicas. Siguiendo a Ben-Ner *et al.*(1993) y Dow (2003), una empresa gestionada por sus trabajadores puede ser definida como un tipo de organización económica donde los trabajadores tienen el control de las decisiones en última instancia. Como contrapartida, en una empresa capitalista los derechos de control están en manos de quienes proveen el capital. El grupo de control es quien determina las reglas de funcionamiento de la organización, diseña su estructura y puede delegar funciones en otros “agentes”.

De las formas jurídicas que adoptan las empresas uruguayas la que claramente se encuentra más próxima a la definición conceptual elegida es la denominada “Cooperativa de Producción” (CP). Sin embargo, la adhesión a esta forma jurídica no resulta enteramente satisfactoria para delimitar el objeto de estudio. Particularmente, constituye una práctica habitual de las cooperativas la contratación de empleados, lo que supone un alejamiento de la definición teórica de EGT pura. En este sentido, se constató para el año 2005 que en promedio un 43% de los ocupados en CP lo estaban en calidad de empleados.

Para distinguir estos casos, la legislación uruguaya define a las EGT como aquellas CP en donde la plantilla de empleados no representa más de un 20% del total de trabajadores-socios. A las EGT se les permite coyunturalmente traspasar dicho umbral debido a cambios estacionales de la demanda, pero deben respetar dicho máximo de modo de poder

acceder a la exoneración de aportes a la seguridad social. Además, la ley prohíbe que las PCs tengan menos de 6 socios.²

A diferencia de lo que sucede en países como Francia o Italia, la legislación uruguaya no incluye otras restricciones para las CP en relación a la contratación de trabajadores asalariados, salvo las que rigen para EC. Los empleados de las CP pueden percibir una remuneración diferente a la de los socios y no suelen cobrar otro ingreso que el salario (por más que la empresa distribuya excedentes entre los socios). Utilizando dicha delimitación, aproximadamente el 50% de las CP quedan definidas como EGT.

Las estimaciones econométricas se realizarán para el conjunto de las EGT, mientras que en la mayor parte de las estadísticas descriptivas que se presentarán se discriminará a las EGT.

Para determinar el impacto que la heterogeneidad de los miembros de la EGT tiene sobre el desempeño de estas empresas se estima la siguiente ecuación salarial de Mincer:

$$w_{it} = \alpha_0 + \alpha_1 C_{it} + \alpha_2 C_{it} H_{jt} + \beta X_{it} + \gamma Z_{jt} + \delta Y_t + \mu_i + u_{it} \quad (1)$$

w_{it} es el logaritmo del salario del trabajador i en el mes t . El coeficiente de interés será α_2 . Siendo C_{it} una variable dummy que toma el valor 1 si el trabajador i trabaja en una EGT en el mes t y 0 en otro caso y H_{jt} es un vector de variables que miden la heterogeneidad de los miembros de la EGT j en la que trabaja el trabajador i en el mes t ; X es un vector con características del trabajador i en el momento t (sexo, edad, antigüedad); Z es un vector con características de la empresa j (rama, tamaño) en la que trabaja el trabajador i en el mes t ; Y_t es un vector de variables dummy de año y mes; μ_i es la heterogeneidad inobservable (captura variables fijas en el tiempo para cada individuo); y u_{it} es el término de error.

El vector H_{jt} incluye a todas o alguna de las siguientes variables: En primer lugar, el Índice de Gini de los ingresos de los trabajadores de la empresa. Dicho indicador refleja la heterogeneidad de las productividades de los integrantes de la empresa. Sin embargo,

² La Ley 13.481 de 23 de junio de 1966 establecía que el número de empleados no debía exceder el 25% de los socios en los primeros 5 años de actividad y el 20% en los años siguientes.

las EGT suelen tener pirámides de ingresos más achatadas que las EC, no reflejando necesariamente las productividades de sus trabajadores (al menos no como las remunera el mercado de trabajo). A su vez, las EGT determinan simultáneamente los salarios de todos sus trabajadores. De modo que la utilización de un indicador de heterogeneidad basado en los ingresos corrientes de la empresa, tendrá evidentes problemas de endogeneidad. Es por ello que también se utiliza el Índice de Gini de la predicción de los ingresos de cada trabajador en una ecuación de Mincer. Dicha ecuación se estimó utilizando únicamente los períodos en que los trabajadores tienen un empleo en una EC y la predicción se realiza para los períodos en que trabajan en una EGT; En segundo lugar, se incluye el Índice de Gini del Efecto Fijo estimado al calcular la misma ecuación de Mincer recién mencionada para los períodos en que los trabajadores se desempeñan en EC. En la medida que dicha estimación se realizó considerando solamente observaciones de trabajadores mayores a 25 años de edad, este Efecto Fijo estimado es una *proxy* del nivel educativo de cada trabajador; En tercer lugar se incluyen tanto el desvío estándar de la edad de los trabajadores de la empresa, como de la proporción de mujeres en la empresa.

El desempeño de las EGT se aproximará por los diferenciales de ingresos observados entre sus trabajadores. La identificación de dichos diferenciales descansa sobre el hecho de que los trabajadores se cambian de empresa en el transcurso de su historia laboral y los datos utilizados incluyen todos sus episodios de empleo, tanto anteriores como posteriores a su empleo en una EGT.

Por otro lado, se utilizarán técnicas de análisis de duración semi-paramétricas (modelo de riesgo proporcional de Cox) y no paramétricas para evaluar la probabilidad de que un miembro deje la empresa, dependiendo de si sus características se alejan de las del miembro mediano.

Asimismo, se analizará la trayectoria de cada trabajador asalariado de las EGT para estudiar si sus características afectan su probabilidad de ser miembro de la EGT. Idealmente quisiéramos poder realizar un análisis de duración similar al de las salidas de la empresa para considerar la trayectoria previa de los miembros y determinar qué características hacen más probable que un trabajador cualquiera se incorpore a la EGT. Pero, para ello nuestra base de datos debería incluir a todos los trabajadores de la

economía, quienes son potenciales candidatos a ingresar a una EGT. Sin embargo, por más que podamos observar la historia previa de quienes ingresan a las EGT, no podemos observar la de quienes no quisieron o no pudieron ingresar a una EGT. Aun así, sí podemos observar la trayectoria de quienes ingresaron a una EGT no como socios sino como asalariados. Siendo que algunos de ellos posteriormente se han convertido en miembros de la EGT. De este modo podremos determinar qué características hacen más probable que se convierta en miembro de la empresa.

Los datos de las Historias Laborales del BPS permiten observar la trayectoria laboral de cada trabajador. De este modo se puede identificar el momento en que los trabajadores ingresan a la empresa y salen de ella, así como su vínculo con ella (en qué momento son socios y en qué momento empleados en la empresa).

Se estiman modelos Cox estratificados en el que cada trabajador tiene su propia función de riesgo flexible en la línea base. La estimación de modelos Cox permite controlar por todas las características invariables en el tiempo a nivel de trabajador (Giuliano et al 2011).

En el análisis de duración de los trabajadores miembros, la variable de interés es el tiempo que transcurre entre el momento en que el miembro ingresa a la empresa (entrada) y cuando la abandona (salida). Mientras que, en el análisis de duración de los trabajadores asalariados, la variable de interés es el tiempo que transcurre entre el momento en que el miembro ingresa a la empresa (entrada) y cuando pasa a ser socio (salida). La trayectoria observada de los trabajadores en la base de datos puede estar completa o censurada por derecha. Esto último ocurre cuando se conoce la fecha de la entrada, pero aún no ocurrió un episodio de salida al final del período observado. La duración de la trayectoria observada para un trabajador $t > 0$ es una ocurrencia de una variable aleatoria T con función de distribución acumulada $F(t)$ y función de distribución de probabilidad $f(t)$. A la función de sobrevivencia se la define como $S(t) = 1 - F(t)$ y representa la probabilidad de que el trabajador sobreviva al momento t . $f(t)$ es la pendiente de $F(t)$ tal que $f(t) = \lim_{\Delta t \rightarrow 0} P(t \leq T \leq t + \Delta t) / \Delta t = \partial F(t) / \partial t = - \partial S(t) / \partial t$.

Tanto $S(t)$ como $F(t)$ satisfacen las propiedades de las probabilidades. $S(t)$ está acotada entre cero y uno y es estrictamente decreciente en t , siendo igual a uno al comienzo de la

trayectoria observada y cero en el infinito. La tasa de riesgo $h(t)$ se define como la probabilidad instantánea de fracaso (salida) al momento t . Es la probabilidad de que el trabajador deje la empresa en el momento t condicional a que el trabajador ha sobrevivido hasta t , tal que $h(t) = f(t) / 1 - F(t) = f(t) / S(t)$. Por último, la función de riesgo acumulativa $H(t)$ se define como la integral de la tasa de riesgo en $(0, t)$, tal que $H(t) = \int_0^t h(u) du$ (Jenkins 2005).

La forma de la función de riesgo es desconocida, de modo que es necesario realizar algún supuesto sobre la distribución de los datos. Para evitar errores de especificación, se optará por estimar un modelo de riesgo proporcional de Cox (1972). La principal ventaja de utilizar este método de estimación es que permite estimar la relación entre la tasa de riesgo y las variables explicativas sin realizar ningún supuesto sobre la forma funcional de la función de riesgo en la línea base.

El modelo Cox utilizado para analizar si la similitud en las características de un trabajador miembro y los demás miembros de las EGT aumentan las probabilidades de que el primero permanezca en la empresa como socios, es el siguiente:

$$h(t|.) = h_0(t) \exp(\phi_1 HCh_i + \phi_2 HCl_i + \phi_3 HAh_i + \phi_4 HAL_i + \phi_5 HS_i + \phi_6 X_i) \quad (2)$$

$h_0(t)$ es la función de riesgo en la línea base. Este modelo se estimará para el conjunto de miembros en EGT y el evento de fallo será cuando el miembro deja la empresa. Siendo los coeficientes de interés $\phi_1, \phi_2, \phi_3, \phi_4$ y ϕ_5 . HCh_i es una variable dummy que toma el valor 1 si el trabajador i pertenece al tercio más calificado de la EGT, mientras HCl_i es una variable dummy que toma el valor 1 si el trabajador i pertenece al tercio menos calificado de la EGT (el grupo omitido es el tercio de trabajadores cercanos a los niveles de calificación del trabajador mediano); HAh_i es una variable dummy que toma el valor 1 si trabajador i pertenece al tercio de mayor edad de la empresa, mientras HAL_i es una variable dummy que toma el valor 1 si trabajador i pertenece al tercio más joven de la empresa. Por último, HS_i es una variable dummy que toma valor 1 si el trabajador es un varón en una EGT con una membresía mayoritariamente femenina o es mujer en una EGT con membresía mayoritariamente masculina. X es un vector que contiene como variables de control: la cohorte del trabajador, el tamaño de la empresa y su rama de actividad.

HCh_i y HCl_i son *proxies* de la similitud en el nivel de calificaciones del trabajador y de los socios de la EGT. Para construirlas se utilizan dos indicadores. Por un lado, se clasifica a los trabajadores en tercios según su nivel salarial. Por otro lado, los tercios se construyen utilizando el efecto fijo estimado de cada trabajador en una ecuación salarial utilizando únicamente los episodios de empleo como asalariados en empresas capitalistas. En la medida que la ecuación salarial se calcula solo para trabajadores de entre 25 y 55 años de edad, es razonable asumir que el efecto fijo capture sus niveles educativos. Estas dos *proxies* junto a HAh_i , HAL_i y HS_i tratan de medir si la posibilidad de que el trabajador abandone la empresa aumenta en la medida que sus características se alejan de las características de los trabajadores-socios cercanos a la mediana.

Para analizar si la similitud en las características de los trabajadores asalariados y los miembros de las EGT aumentan las probabilidades de que los primeros sea incorporados como socios, se utilizará un modelo Cox similar.

En las estimaciones de trabajadores excluimos a aquellos con mayores y aquellos con menores salarios (percentil 100 y 1 respectivamente). Se eliminan los casos de censura por izquierda, o sea aquellos casos en donde el trabajador ya estaba en la empresa en enero de 1997. El problema de censura por derecha se trata al usar técnicas de análisis de duración. Asimismo, excluimos a trabajadores mayores a 55 años (ya que probablemente estén considerando jubilarse). No se consideran separaciones de miembros debidas a cierres de empresas. Separaciones debidas a otras causas diferentes del despido o la renuncia (jubilaciones, muertes) son tratadas como censuradas.

En el caso del análisis de trayectorias de los trabajadores, las variables explicativas se construyen para cada episodio (*spell*) de empleo. Por lo tanto, los promedios varían tanto entre como dentro de cada empresa, pero solo varían entre individuos y no para cada uno de éstos. De este modo es que se puede estimar el modelo Cox estratificado por empresa.

Resultados

Evidencia Descriptiva

El objetivo de esta sección es brindar información sobre las características de los trabajadores de las EGT, los niveles de heterogeneidad interna de estas empresas y su evolución en con el tiempo.

La base de datos utilizada tiene entre 153 y 183 EGT en cada mes observado. Habiendo 50 veces más EC en el año 2012. Considerando que para el caso de las EGT se cuenta con el universo de empresas registradas, mientras que para las EC se tiene una muestra del 20%, esto implicaría que las EGT representan menos del 0,5% de las empresas registradas. Las EGT son en promedio más pequeñas que las demás CP (aunque con un mayor número absoluto de miembros), pero tiene una fracción de asalariados en el empleo mucho menor. A su vez, las EC son mucho más pequeñas, alcanzando en promedio entre 4 y 6 empleados entre 1997 y 2012. Esta no es la única diferencia entre las EGT, las demás CP y las EC. Entre las primeras es mayor la participación de las empresas del sector transporte, en particular al comienzo del período. Tienen una participación menor las EGT que desarrollan su actividad en el sector servicios. Sin embargo, esta crece durante el período, llegando a ser mayor entre las EGT que entre las EC.

Entre los trabajadores de las CP y en particular de las EGT se observan en promedio características diferentes a quienes trabajan en las EC. Se puede destacar, según muestra el Cuadro 1, que en promedio los trabajadores de las EGT son más viejos, con una antigüedad levemente mayor y con una participación femenina menor, aunque esta última crece durante el período alcanzando niveles muy similares a los de las EC. Asimismo, entre los trabajadores de las EGT los salarios fueron mayores a los observados en las EC al comienzo del período, pero al crecer más lentamente, alcanzan menores niveles a hacia el año 2012. Comparando a las EGT con las otras CP, se observa que los promedios salariales de todos los trabajadores y exclusivamente de sus miembros tienen mayores diferencias para el conjunto de las CP que para las EGT.

Para las EGT y las CP la información se presenta también por separado para sus miembros, ya que el ser el grupo que toma las decisiones en la empresa, es su heterogeneidad la que afecta los costos de las decisiones colectivas.

Por último, entre los trabajadores de las EGT (en particular entre sus miembros) se observa una menor dispersión promedio que en las EC en las tres variables que se describen (salarios, edad y antigüedad). Este dato sería una indicación de una menor heterogeneidad en las características de los miembros en las EGT, consistente con algunas de las hipótesis mencionadas más arriba. Este resultado también está en línea con evidencia previa encontrada en Dean (2014) que reporta altos niveles de homogeneidad de las EGT uruguayas a partir de datos de una encuesta a empresas del año 2010. En dicho trabajo se señala que aproximadamente en el 50% de las EGT no convive ningún socio menor de 35 años con otro mayor de 50, mientras que en tan solo cerca del 10% conviven socios con estudios terciarios finalizados y socios que no hayan terminado estudios secundarios.

Cuadro 1. Estadísticas Descriptivas: Datos de panel con datos vinculados Trabajador- Empresa. Información a nivel de empresa

	1997		2002		2007		2012	
	Socios	Todos	Socios	Todos	Socios	Todos	Socios	Todos
<i>Todas las CP</i>								
Número de empresas	267		272		381		376	
Número promedio de trabajadores	15.3	36.1	14.1	30.7	12.2	25.3	13.7	32.3
Fracción de mujeres	0.25	0.31	0.30	0.36	0.39	0.43	0.45	0.49
Salario promedio	20.5	17.8	11.8	11.3	13.8	13.0	18.6	17.2
Dispersión salarial media (SD)	3.9	5.0	2.3	3.4	3.9	4.7	5.3	6.6
Edad promedio	43.8	42.1	45.5	43.9	46.0	44.5	46.0	43.7
Promedio de dispersión de edad (SD)	8.9	9.8	8.7	9.5	9.0	9.9	9.3	10.2
Antigüedad promedio	5.6	4.6	6.5	6.0	6.8	5.3	6.8	5.6
Promedio de dispersión de antigüedad (SD)	1.9	2.5	2.7	3.3	2.9	3.6	3.3	3.9
Fracción en industria manufacturera	0.16		0.16		0.16		0.16	
Fracción en transporte	0.43		0.40		0.24		0.23	
Fracción en servicios	0.29		0.37		0.40		0.51	
<i>EGT</i>								
Número de empresas	153		171		172		183	
Número promedio de trabajadores	22.7	24.1	19.9	21.1	22.2	23.7	23.7	25.3
Fracción de mujeres	0.24	0.25	0.26	0.27	0.35	0.36	0.40	0.40
Salario promedio	16.0	15.7	11.4	11.2	12.4	12.4	16.7	16.7
Dispersión salarial media (SD)	2.2	2.6	2.1	2.5	3.1	3.4	5.0	5.2
Edad promedio	43.7	43.5	45.3	45.2	44.2	43.9	44.5	44.3
Promedio de dispersión de edad (SD)	9.1	9.4	9.1	9.3	9.2	9.4	9.6	9.7
Antigüedad promedio	4.6	4.5	6.1	6.0	5.1	4.9	5.4	5.2
Promedio de dispersión de antigüedad (SD)	1.9	2.1	3.0	3.1	2.8	2.9	3.1	3.1
Fracción en industria manufacturera	0.19		0.19		0.20		0.18	
Fracción en transporte	0.61		0.52		0.33		0.30	
Fracción en servicios	0.14		0.22		0.31		0.42	
<i>EC</i>								
Número de empresas	9435		7690		10745		9089	
Número promedio de trabajadores	4.1		4.1		4.4		5.9	
Fracción de mujeres	0.39		0.40		0.40		0.42	

Salario promedio	14.8	11.5	13.6	19.1
Dispersión salarial media (SD)	7.3	5.6	6.2	8.6
Edad promedio	36.6	38.5	38.4	38.2
Promedio de dispersión de edad (SD)	10.3	10.0	10.2	10.3
Antigüedad promedio	4.6	5.3	4.3	4.0
Promedio de dispersión de antigüedad (SD)	3.6	3.5	3.5	3.6
Fracción en industria manufacturera	0.25	0.21	0.19	0.17
Fracción en transporte	0.10	0.11	0.13	0.13
Fracción en servicios	0.27	0.30	0.31	0.33

Notas Cuadro 1. Las estadísticas resumen corresponden a octubre de cada año. La antigüedad se mide en años. Los salarios están medidos en miles de pesos uruguayos deflactados por el Índice de Precios al Consumo (IPC) en base dic de 2015. SD = desvío estándar. Las cifras por rama excluyen ramas con baja pero creciente presencia de CP como sector agropecuario, construcción, saneamiento y comercio.

Como ya fue señalado en la revisión de antecedentes, la búsqueda de una mayor homogeneidad entre socios de las EGT, puede condicionar qué tipo de trabajador asalariado sería aceptado como miembro. La existencia de elementos comunes entre los miembros en alguna dimensión (edad, calificaciones, étnica, ideológica, cultural, etc.) podría ser un criterio de *screening*.

Los datos con que se cuenta permiten evaluar la presencia de solo alguna de estas características. Seguidamente se muestra información sobre la evolución del grado de heterogeneidad entre los socios de las EGT en la edad, sexo y las *proxies* de los niveles educativos. Pero primero se presenta la evolución del tamaño promedio de las EC y las EGT según la edad de cada tipo de empresa, ya que la heterogeneidad de cada tipo de empresa es esperable que aumente a medida que su tamaño se incrementa. Para ambos gráficos se excluyeron a las empresas agropecuarias, así como a las que tienen menos de 3 trabajadores.

Gráfico 1. Evolución promedio del tamaño de las empresas según su tipo y edad (en meses)



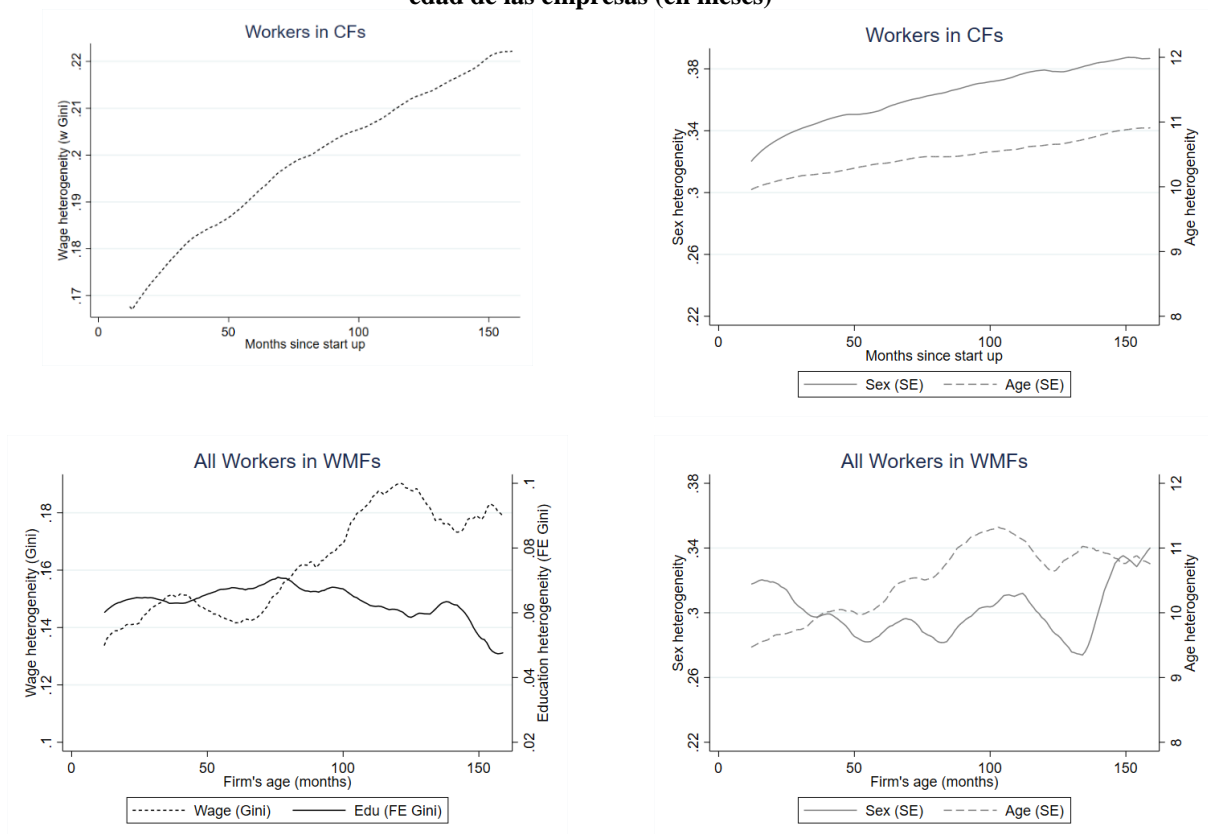
Fuente: Elaboración propia en base a datos del BPS

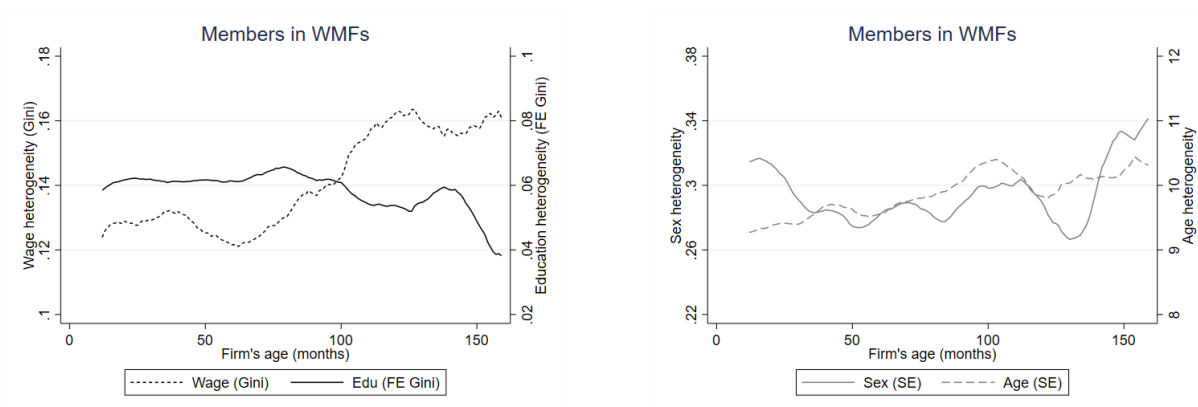
Nota Gráfico 1: Los gráficos muestran los valores promedio de los últimos 12 meses

En el Gráfico 1 podemos observar como el tamaño de los dos tipos de empresa aumenta con la edad de las mismas. Sin embargo, lo hacen a un ritmo muy diferente. En promedio las EGT nacen con unos 11 trabajadores y 13 años después su tamaño aumentó a cerca de 17 trabajadores. Mientras que las EC nace en promedio con un tamaño mucho menor, pero a partir de onceavo año de vida su tamaño supera al de las EGT. Llegando, 160 meses después de haber sido creadas, a un tamaño promedio de 19 trabajadores.

En el Gráfico 2 se puede ver la evolución de la heterogeneidad de EC y EGT según su edad y considerando los cuatro indicadores a utilizarse en la ecuación para la estimación de los diferenciales salariales. En el caso de las EGT, la información también se presenta únicamente para sus miembros y para ambos tipos de firma se excluye a los trabajadores menores de 25 años.

Gráfico 2. Evolución promedio de diferentes indicadores de heterogeneidad intrafirma según tipo y edad de las empresas (en meses)





Fuente: Elaboración propia en base a datos del BPS
 Nota Gráfico 2: Los gráficos muestran los valores promedio de los últimos 12 meses

Según se puede ver, la heterogeneidad de los trabajadores de las EC aumenta con la edad de la empresa, tanto en términos salariales, como de género y edad de los trabajadores. En el Gráfico 2 también se ve la evolución de estos indicadores para las EGT.³ Además de mostrar tendencias menos claras al tener un número bastante menor de observaciones, podemos apreciar que las tendencias son algo diferentes. Si bien la heterogeneidad de la edad de los trabajadores también tiende a aumentar, esto no es lo que sucede con la heterogeneidad del sexo. Sin embargo, la heterogeneidad salarial si exhibe una evolución similar a las EC. También crece, pero comienza en niveles mucho menores. Mientras el Gini salarial de las EC aumenta de menos de 0.17 a algo más de 0.22 en los primeros 13 años de vida de la empresa, en la EGT aumenta de algo menos de 0.14 a 0.18. Ahora bien, cuando nos enfocamos en los miembros de las EGT, el Gini salarial pasa de un promedio de 0.13 a 0.16. Por último, la heterogeneidad educativa (medida a través de la estimación del efecto fijo en una ecuación de Mincer) tiene una ligera tendencia a disminuir.⁴

3 El Gráfico 2 muestra una evolución mucho menos suave de los indicadores de las EGT cuando se la compara con la evolución de las EC. Esto se debe a que hay un número mucho menor de EGT creadas después de 1996 (unas 290 EGT). Esto provoca que cambios abruptos en una o pocas empresas puede tener un fuerte impacto sobre el promedio de las empresas. Por otro lado, este problema se incrementa con el aumento de la edad de las empresas. Ya que a la trayectoria de las EGT está censurada a la vez que a medida que algunas EGT cierran, va cambiando la composición de las empresas con las que se calculan los promedios. Como ya se señaló, para el promedio del primer año de vida de las EGT se utiliza la información de casi 290 empresas. Pero para el promedio del decimotercer año de vida de las EGT se utilizaron menos de 10 empresas (la evolución de la cantidad de empresas utilizadas se puede ver en el Gráfico A1. del Anexo). Esto se debe a que para ese año solo se pueden usar los datos de las empresas creadas en 1996 y que sobrevivieron 13 años después.

4 La evolución de este indicador no se presenta para las EC ya que la muestra de empresas con la que se cuenta en la base de datos solo tiene información de sus trabajadores mientras permanecen en las empresas de la muestra. Al no contar con observaciones de sus empleos previos o posteriores en empresas no muestreadas, no se puede estimar el efecto fijo para los mismos. Otra base de datos con la que se cuenta es una muestra de trabajadores, conteniendo información de toda su trayectoria laboral, pudiendo estimarse el efecto fijo de cada trabajador siempre y cuando cambien de empleo. Sin embargo, al ser una muestra de

Le tendencia a que disminuya la heterogeneidad educativa de los miembros de las EGT con la edad de la empresa, puede explicarse por la hipótesis de Hansmann (1996). En la medida que las EGT necesiten aumentar de tamaño con la edad de la misma, los miembros de las EGT podrían preferir una mayor homogeneidad a los efectos de mantener bajos los costos de las decisiones colectivas que aumentan con la cantidad de miembros.

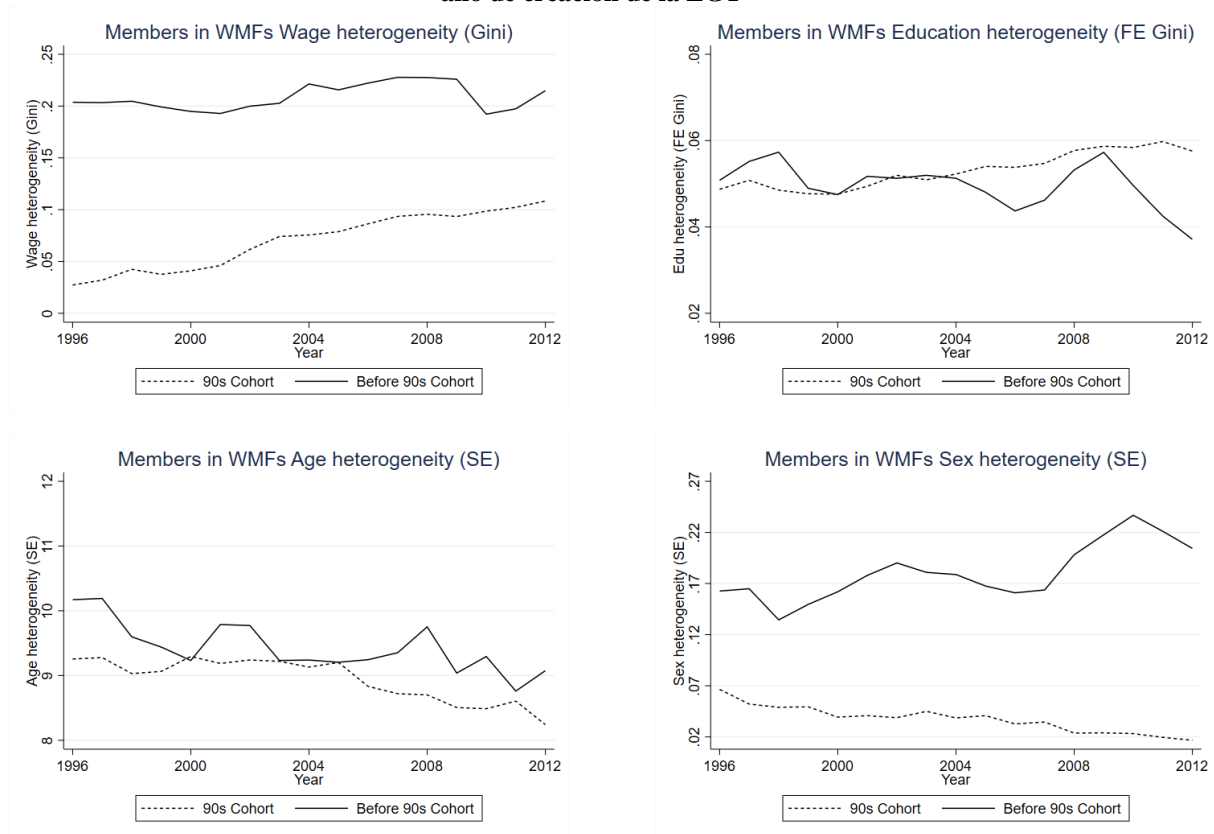
Sin embargo, es necesario tomar en cuenta otras hipótesis si queremos considerar posibles explicaciones al aumento de la dispersión salarial en las EGT, cuando los indicadores utilizados de heterogeneidad no aumentan o decrecen. Este fenómeno podría explicarse (además del efecto de variables no observadas) por la existencia de una jerarquía basada en conocimientos según la hipótesis de Garicano & Rossi-Hansberg (2015). Según esta hipótesis, el surgimiento de una estructura jerárquica dentro de la empresa, a medida que aumenta de tamaño, permitirá a las personas más calificadas la delegación de tareas para las que están sobrecalificadas, aumentando de esta manera su propia productividad. Pero en el caso de las EGT habría que considerar un elemento adicional. Uno de los factores que suelen ser señalados como una motivación de los trabajadores para integrar una EGT, son los elementos ideológicos (Abramitzky 2008; Burdín 2016). Quienes integran una EGT pueden querer una empresa con una pirámide salarial más igualitaria a las observadas en las EC. Esta motivación ideológica puede estar particularmente presente entre los socios fundadores de la EGT que son quienes enfrentan un mayor costo para crear la empresa (Burdín 2016). Además, como ya fue señalado, las EGT más igualitarias pueden enfrentar un problema de *fuga de cerebros*. Estos factores pueden llevar a que en promedio las EGT cambien sus preferencias por una menor igualdad interna a medida que cambia la composición de sus miembros y los socios fundadores empiezan a convivir con nuevos socios. Por otro lado, la dificultad para retener y reclutar trabajadores calificados puede llevar a que paulatinamente se acepte una mayor dispersión salarial dado cierto nivel de calificaciones de sus trabajadores.

La información presentada en el Gráfico 2 solo incluye a las empresas creadas después de abril de 1996 (primer mes para el que se tiene información en la base de datos). Las EGT creadas con anterioridad no pudieron ser consideradas. Sin embargo, para estas empresas si se tiene el dato de la fecha de creación de la empresa. Esto permite observar

trabajadores, no es representativa de las empresas. Hacer una estimación dicha estimación con esta segunda base, arrojaría resultados sesgados sobrerrepresentando a las empresas más grandes.

la evolución promedio para estas empresas según cohorte. Dicha información se presenta en el Gráfico 3. En el mismo se puede ver la evolución de los cuatro indicadores de heterogeneidad utilizadas según año calendario y cohorte de las EGT. Se utilizan solo dos cohortes: las creadas antes de la década de los 90 y las creadas durante los 90 (pero antes de abril de 1996).

Gráfico 3. Evolución promedio de diferentes indicadores de heterogeneidad entre miembros según año de creación de la EGT



Fuente: Elaboración propia en base a datos del BPS
 Nota Gráfico 3: Los gráficos muestran promedios anuales

Como puede verse en el Gráfico 3, en ningún caso la evolución de la heterogeneidad coincide para los tres grupos de EGT, las creadas antes de 1990, las creadas entre 1990 y 1996 (ambas en el Gráfico 3) y las creadas después de 1996 (ver en el Gráfico 2). La heterogeneidad salarial aumentaba claramente para las EGT post-1996 y también lo hace para las creadas entre 1990 y 1996. Pero no sucede lo mismo con las EGT creadas antes de 1990, para las cuales se ve una evolución relativamente estable. Es posible que dicha evolución se deba a que la dispersión salarial ya haya aumentado en el pasado y una vez alcanzado en nivel observado, permanezca estable. Lo otro que llama la atención, es el bajo nivel del Gini salarial entre las EGT creadas entre 1990 y 1996 (ubicándose entre 0.03 y

0.1). Este resultado se ve fuertemente afectado por el hecho de que la mayoría de las EGT creadas en este período fueron empresas de taxis. Estas son empresas pequeñas con cerca de 10 miembros donde casi todos cumplen las mismas tareas (son choferes) y perciben ingresos muy similares.

Cuando se observa la evolución de la heterogeneidad educativa entre los miembros de las EGT se observa que la misma tiende a aumentar para la cohorte 90-96, mientras tiende a disminuir para la cohorte pre-90. También se observaba una tendencia similar entre las EGT post-96 a medida que aumentaba su edad. Ahora bien, cuando se considera la heterogeneidad en la edad de los miembros se observa que la misma disminuye para las dos cohortes de EGT creadas antes de 1996. Mientras para las EGT creadas después de 1996, la misma tendía a aumentar con la edad de la empresa (ver Gráfico 2). Por último, la heterogeneidad de género entre los miembros de las EGT tiende a aumentar para la cohorte pre-90 y a disminuir para la cohorte 90-96. Mientras no se observaba una tendencia clara según la edad de las EGT post-96.

Estas diferencias observadas en la evolución de la heterogeneidad de los miembros de las EGT según sus cohortes muestran que no hay una tendencia global para el conjunto de este tipo de empresas. Como se observó en el Cuadro 1 la composición de las EGT según la rama de actividad cambió mucho durante el período estudiado. Este hecho sugiere que la evolución diferente según la cohorte, probablemente se debe a una diferente composición de sector de actividad de cada cohorte. En este caso, seguramente la evolución de la heterogeneidad dependería de factores como el tipo de tecnología o estructura organizacional que las empresas se dan en cada rama. De ser así, ninguna de las posibles respuestas teóricas esbozadas en los párrafos previos para explicar los resultados del Gráfico 2, sería la mejor explicación para el conjunto de las EGT uruguayas. En el mejor de los casos algunas hipótesis tendrían un mayor peso para explicar el comportamiento de un subgrupo de EGT, mientras otras serían más adecuadas para explicar los resultados de otro grupo de EGT.

Estimación de diferenciales salariales

Seguidamente se presenta el resultado de la estimación Intragrupos de la ecuación salarial de Mincer para estudiar qué impacto tienen diferentes niveles de heterogeneidad de los trabajadores de las EGT sobre sus ingresos. La variable dependiente es el logaritmo del salario y se incluye una *dummy* identificando a las EGT. A esta última se la interactúa con diferentes indicadores de la heterogeneidad de los trabajadores o los miembros de la EGT. Inicialmente en la columna 1 del Cuadro 2 se estima el diferencial salarial experimentado por los trabajadores en relación a quienes trabajan en EC. En promedio, los trabajadores experimentan un diferencial salarial positivo de 5.1% por estar trabajando en una EGT.⁵ Seguidamente, en la columna 2 se incorpora como indicador de heterogeneidad el índice de Gini de los salarios de los trabajadores de la empresa en donde se emplea al trabajador i en el mes t . El coeficiente de dicho indicador resulta ser no significativo. Sin embargo, dicha estimación seguramente tenga algunos problemas de endogeneidad, ya que este indicador y la variable dependiente se deciden simultáneamente. Las EGT determinan los ingresos que recibirán sus trabajadores al mismo tiempo. Es por eso que en la columna 3 se utiliza el índice de Gini promedio durante el primer año observado de la empresa de los salarios de los trabajadores de la empresa. Dicho indicador resulta tener un efecto positivo sobre los ingresos obtenidos por los trabajadores de las EGT. En la columna 4 se incorporan también el promedio durante el primer año observado de la empresa del desvío estándar de la edad de los trabajadores de la empresa y de la proporción de mujeres. A su vez, se estiman también estos efectos para los trabajadores de las EC. En este caso, se ve que la desigualdad salarial a la interna de la empresa no tiene un efecto significativo sobre los salarios de sus trabajadores, como si sucede con las EGT. En el caso de la heterogeneidad de género, el efecto es negativo para ambos tipos de empresa. Mientras que la heterogeneidad de las edades tiene un efecto negativo para las EC y positivo para las EGT.

A partir de la columna 5 se utilizan los indicadores de heterogeneidad elaborados únicamente incluyendo a los miembros de las EGT. En particular la estimación en la columna 5 se diferencia solo en esto de la columna 3. Esta restricción se incorpora ya que la heterogeneidad que resulta más relevante considerar es la del grupo que toma las

⁵ Esta estimación es similar, aunque levemente mayor a la encontrada en Burdín (2016).

decisiones. En la columna 6, el índice de Gini del primer año de los miembros de la EGT se construyó utilizando una predicción de sus salarios en lugar de los salarios corrientes. Dicha predicción se realizó a partir de una estimación por MCO de sus salarios en los períodos en que estuvieron trabajando en EC. El motivo de utilizar una predicción en lugar del salario corriente se explica por la estructura salarial más igualitaria que suelen tener las EGT. Lo que hace que su dispersión no esté captando adecuadamente la heterogeneidad en las productividades de sus trabajadores. La estimación de la columna 7 es igual a la 6 salvo que la predicción de salario se realizó usando FE. En la col 8 el Índice de Gini se elabora con los efectos fijos estimados en una ecuación salarial para trabajadores mayores de 25 años en los períodos en que trabajaron en EC. Se considera que esta es la mejor aproximación que se puede tener a la heterogeneidad de los niveles educativos de los miembros de la EGT. En la columna 9 además se consideran solo trabajadores que tengan entre 25 y 55 años de edad, de modo de reducir las posibilidades de que el efecto de la educación en la estimación de la ecuación 2 no sea capturado por el efecto fijo. En la ecuación 10 se agrega una interacción con la cantidad de miembros que tuvo la EGT en su primer año para considerar el efecto combinado de heterogeneidad y tamaño. La columna 11 agrega además la heterogeneidad en edad y sexo. En todas las estimaciones realizadas, el efecto sobre los diferenciales salariales de las EGT de una mayor heterogeneidad en las calificaciones o niveles educativos es positivo. Dicho efecto además es creciente con el tamaño de la empresa (como muestran los resultados en las columnas 10 y 11). Por último, cuando los indicadores de heterogeneidad se elaboran únicamente para los miembros de las EGT, el efecto de una mayor diversidad en la edad es positivo, mientras el efecto de una mayor diversidad de género es negativo.

Los resultados que se muestran en el Cuadro 2 muestran los efectos promedio sobre los diferenciales salariales de los trabajadores. Sin embargo, teniendo en cuenta que los miembros de las EGT toman sus decisiones de manera democrática, podría ser más relevante conocer los efectos de los indicadores de heterogeneidad sobre el trabajador mediano. En caso que haya niveles de desigualdad de ingresos relevantes al interior de las EGT, un efecto positivo de la heterogeneidad para el promedio podría coexistir con un efecto negativo para la mayoría de los miembros. Este potencial problema fue descartado, ya que se repitieron todas las estimaciones de las columnas (1) a (11) del

Cuadro 2 realizando estimaciones cuantílicas en la mediana obteniéndose resultados cualitativamente iguales a los que muestran el Cuadro 2.⁶

⁶ Para poder realizar regresiones cuantílicas con datos de panel se aplicó el método propuesto por Canay (2011).

Cuadro 2. Diferenciales salariales de trabajadores de EGT

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
EGT	0.051 (0.011)***	0.040 (0.020)**	-0.106 (0.021)***	-0.108 (0.054)**	-0.089 (0.020)***	-0.575 (0.028)***	-0.234 (0.038)***	-0.106 (0.037)***	-0.073 (0.053)	-0.097 (0.053)*	-0.269 (0.080)***	
Gini Salarial * EGT		0.056 (0.073)										
Gini Salarial Inicial				0.055 (0.047)								
Gini Salarial Inicial * EGT			0.952 (0.091)***	1.078 (0.118)***								
SD Inicial de Sexo				-0.056 (0.013)***								
SD Inicial de Sexo * EGT				-0.755 (0.064)***								
SD Inicial de Edad				-0.007 (0.001)***								
SD Inicial de Edad * EGT				0.017 (0.005)***								
Gini Salarial Inicial los Miembros de la EGT					0.893 (0.090)***							
Gini Inicial de la estimación MCO de los salarios los Miembros de la EGT						15.193 (0.622)***						
Gini Inicial de la estimación por EF de los salarios los Miembros de la EGT							3.165 (0.385)***					
Gini Inicial de la estimación del EF de los Miembros de la EGT								1.877 (0.433)***	1.697 (0.628)***	1.035 (0.619)*	-0.600 (0.732)	
Gini de la estimación del EF de los Miembros de la EGT												2.515 (1.05)**

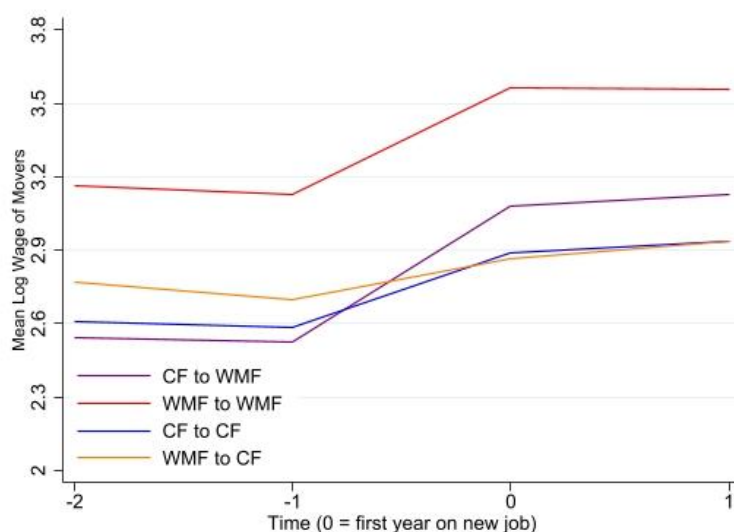
Gini Inicial de la estimación del EF de los Miembros de la EGT										0.006 (0.001)***	0.006 (0.001)***	
* Membresía Inicial												
SD Inicial de Sexo de los Miembros											-0.141 (0.084)*	
SD de Sexo de los Miembros												-0.915 (0.186)***
SD Inicial de Edad de los Miembros											0.036 (0.008)***	
SD de Edad de los Miembros												0.034 (0.019)*
Observaciones	7,101,160	7,101,160	7,101,160	6,723,532	7,099,862	7,101,160	7,101,160	7,087,254	3,181,179	3,181,179	3,181,179	3,168,068
R-squared	0.193	0.193	0.194	0.192	0.194	0.196	0.194	0.193	0.185	0.186	0.187	0.163
Número de individuos	202,995	202,995	202,995	191,479	202,964	202,995	202,995	202,718	83,502	83,502	83,502	75,819
Controles de Edad, Sexo, Antigüedad y Tamaño de la empresa	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si
Efectos Fijos de Trabajador	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si
Efectos Fijos de Empresa	No	No	No	No	No	No	No	No	No	No	No	Si
Efectos Fijos de Año	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si
Efectos Fijos de Mes	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si
Efectos Fijos de Rama	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	No

Nota Cuadro 2: La variable dependiente es el logaritmo del salario mensual. Las estimaciones en las columnas (9)-(11) excluye de la estimación a los trabajadores menores de 25 años y a los mayores de 55. Todas las estimaciones incluyen un set de 17 *dummies* de año, 11 *dummies* de mes y 9 *dummies* de rama. Errores estándar (entre paréntesis) están clueterizados a nivel individual. *Significativo al 10%; **Significativo al 5%; ***Significativo al 1%

La estrategia de identificación de los diferenciales de ingresos de los trabajadores de las EGT enfrenta un potencial problema de endogeneidad en el caso en que hubiese alguna diferencia sistemática entre los trabajadores que cambian de tipo de empresa y quienes no lo hacen. En este caso los resultados podrían estar sesgados. Para atender este posible problema se siguió la estrategia sugerida por Card et al (2013). En primer lugar, se realizó un simple estudio de eventos donde se analiza el efecto de la transición de una empresa a otra sobre los ingresos de los trabajadores. Los resultados pueden verse en el Gráfico 4. Para ello se consideran cuatro grupos de trabajadores según se muevan desde o hacia una EGT o una EC. Para esta estimación solo se tomaron en cuenta a los trabajadores con al menos 24 meses de trabajo en el empleo que dejan y al menos otros 24 meses en el nuevo empleo. En el Gráfico 4 se observa que en promedio los cuatro grupos de trabajadores experimentaron un aumento de los salarios al cambiar de trabajo. Dicho fenómeno se explica en gran medida por el hecho de que el 70% de las transiciones desde una EC y el 77% de las transiciones desde una EGT, fueron salidas voluntarias. Por lo cual, es de esperar que las mismas se hayan dado mayoritariamente ante la posibilidad de que la transición implique justamente un aumento de ingresos.

El gráfico sugiere que los diferentes grupos ya tenían diferentes salarios antes de la transición. Por ejemplo, los ingresos promedio de quienes estando en una EGT se movieron a una EC son menores en relación a quienes se movieron a otra EGT. Entre quienes parten de EC también hay diferencias, aunque menores, siendo quienes se mueven a una EGT quienes tienen menores ingresos antes de moverse. En ambos casos sucede que los trabajadores que se mueven no solo de empresa, sino que además cambian de tipo de empresa, son quienes tenían un menor ingreso antes de la transición. Siendo quienes se mueven de una EC a una EGT quienes experimentan el mayor aumento. Teniendo en cuenta que todos los grupos experimentan en promedio un aumento de ingresos al moverse de empresa, es el cruce entre las curvas de quienes se mueven de una EC a una EGT y quienes se mueven de una EGT a una EC, lo que explicaría la presencia de un diferencial de ingresos a favor de las EGT, como el observado en las estimaciones del Cuadro 2.

Gráfico 4. Salario promedio de *switchers* según tipo de movimiento, 1997-2013



Fuente: Elaboración propia en base a datos del BPS

Nota Gráfico 4: El gráfico muestra el salario promedio (en log) observado en 1997-2013 de quienes cambiaron de empleo y conservaron tanto el empleo previo como el siguiente por al menos 24 meses consecutivos. Empleo refiera a los vínculos trabajador-empresa que representan la mayor parte de los ingresos del trabajador.

Tomados en su conjunto, los perfiles aproximadamente planos pre y post cambio de empleo, sugieren que los ingresos de quienes cambian de empresa pueden aproximarse adecuadamente por una combinación de un componente permanente por trabajador, un componente por empresa y un componente residual que varía en el tiempo y no está correlacionado con la movilidad. Por lo tanto, en segundo lugar, se procedió a utilizar una especificación de la ecuación (1) que incluya efectos fijos de trabajador y de empresa. La cual arrojaría una estimación insesgada del diferencial de ingresos de las EGT. Dicha estimación es la que se presenta en la columna (12) del Cuadro 2. Como puede observarse los resultados no son cualitativamente diferente de los anteriores. Una desventaja de aplicar este método es que, al incluirse efectos fijos por empresa, no se pueden incluir en el modelo variables que estén fijas en el tiempo para cada empresa. Este es el caso de las variables *dummies* de rama, la que identifica a las EGT o los indicadores de heterogeneidad utilizados en las estimaciones previas. En las estimaciones de las columnas (3) a (11) se utilizó el valor del promedio del indicador de heterogeneidad del primer año observado de la EGT. De modo que, para poder incorporar efectos fijos por empresa, se tuvo que utilizar los valores corrientes de dichos indicadores. Aumentando, en el caso de la estimación de la columna (12), los potenciales problemas de endogeneidad que surgirían de la determinación simultánea para las EGT de los ingresos sus trabajadores y la composición interna de la misma.

Los resultados del Cuadro 2 indican que para el promedio de los trabajadores de las EGT una mayor heterogeneidad educativa o de edades de sus miembros, está asociada a la obtención de mayores ingresos. Mientras ocurriría lo opuesto para el caso de la heterogeneidad de género. Sin embargo, la evolución promedio de la heterogeneidad interna de las EGT observada en los Gráficos 2 y 3 sugiere que dichos resultados podrían diferir según la rama de actividad en que están insertas estas empresas. Para considerar esta posibilidad se estimó tres veces una ecuación de Mincer igual a la utilizada en la columna 11 del Cuadro 2. Pero en este caso se interactuó en cada oportunidad un indicador de heterogeneidad diferente con variables *dummies* de rama de actividad. De este modo se pudo calcular el efecto de la heterogeneidad de los miembros de las EGT sobre los diferenciales salariales de sus trabajadores para cada una de las 9 ramas consideradas. Los resultados se muestran en el Cuadro 3.

Cuadro 3. Estimación del efecto de la heterogeneidad de los miembros de las EGT sobre sus diferenciales salariales según rama.

	(1)	(2)	(3)
	Gini Inicial de la estimación del EF de los Miembros de la EGT	SD Inicial de Edad de los Miembros	SD Inicial de Sexo de los Miembros
Industria Manufacturera	-5.611 (0.822)***	-0.018 (0.010)*	-0.924 (0.094)***
Agua y Saneamiento	0.836 (0.775)	0.034 (0.008)***	0.374 (0.111)***
Construcción	-2.424 (3.662)	0.007 (0.022)	0.000 (0.000)
Comercio	-1.511 (1.660)	-0.015 (0.022)	-0.656 (0.599)
Transporte	1.539 (0.768)**	0.043 (0.010)***	0.528 (0.226)**
Servicios de Trabajo Poco Calificado	-0.780 (0.842)	0.019 (0.008)**	-0.054 (0.107)
Enseñanza	1.333 (1.423)	0.024 (0.011)**	0.168 (0.223)
Salud	-2.602 (1.508)*	0.010 (0.023)	-0.252 (0.306)
Otros Servicios de Trabajo Calificado	-6.946 (1.557)***	-0.028 (0.014)*	-0.562 (0.217)***
Individuos	83,502	83,502	83,502
Observaciones	3,181,179	3,181,179	3,181,179

Notas Cuadro 3: La variable dependiente es el logaritmo del salario mensual. El cuadro muestra las estimaciones de los coeficientes de las dummies de rama interactuados con las variables de heterogeneidad de cada columna. Las estimaciones excluyen a los trabajadores menores de 25 años y a los mayores de 55. Todas las estimaciones incluyen las siguientes covariables; dummy de EGT; edad y edad al cuadrado y su interacción con la dummy de sexo; antigüedad y antigüedad al cuadrado; tamaño de la empresa; y un set de 17 dummies de año, 11 dummies de mes y 9 dummies de rama. Errores estándar (entre paréntesis) están clueterizados a nivel individual. *Significativo al 10%; **Significativo al 5%; ***Significativo al 1%.

Para cada uno de los indicadores de heterogeneidad utilizados (educación, edad y sexo) se encuentra que sus impactos sobre los diferenciales salariales son distintos según la rama de actividad en que funciona la EGT. La heterogeneidad educativa parecería tener un efecto negativo sobre los salarios en las EGT de la Industria Manufacturera, de la Salud y de Otros Servicios de Trabajo Calificado, mientras tendría un efecto positivo sobre los salarios de las EGT del sector Transporte. Para las demás ramas los coeficientes no resultaron significativamente diferentes de cero. Una diversidad similar se observa cuando se considera la heterogeneidad de edades. Siendo su efecto negativo para dos de las ramas de actividad consideradas, mientras es positivo para otras cuatro. Por último, cuando se considera la heterogeneidad de género, su efecto sería en promedio negativo para las EGT de dos ramas, mientras es positivo para otras dos.

Según estos resultados sería apresurado afirmar para el conjunto de las EGT que una mayor o menor heterogeneidad entre sus miembros tendrá un impacto positivo o negativo sobre sus ingresos. El hecho de que dicho impacto dependa de la rama de actividad, sugiere que el tipo de tecnología utilizada en cada sector de actividad, el cual a su vez condiciona la estructura organizacional de la empresa, llevan a que una mayor heterogeneidad de sus miembros tenga impactos muy diferentes para las EGT.

Análisis de duración semiparamétrico

Seguidamente se realiza un análisis de duración para evaluar si la distancia en las características de cada trabajador respecto a las características predominantes en la EGT hace que sea más probable que deje la empresa. Para ello se divide a los trabajadores en terciles o tercios de las variables que consideran la heterogeneidad (educación, edad y sexo). Los trabajadores que forman parte del primer y tercer tercio son quienes se alejan más de las características medianas. Si el proceso de salida de los trabajadores de una EGT contribuyera a una mayor homogeneidad interna, los trabajadores del segundo tercio deberían ser los que tengan menos probabilidad de salir de la empresa. Lo contrario sucedería si el proceso de salida favoreciera una mayor heterogeneidad.

Como ya fue señalado, una de las desventajas del análisis de duración usando únicamente las funciones de sobrevivencias, es que no se pueden incluir variables de control. Para

atender esta limitación en la presente sección se presentan estimaciones semi paramétricas de riesgo proporcional de Cox (1972). La principal ventaja de este método es que permite estimar la relación entre la tasa de riesgo y las variables explicativas sin realizar ningún supuesto sobre la forma funcional de la función de riesgo en la línea base.

Se estimaron funciones de supervivencia, así como estimaciones semiparamétricas de Cox para el conjunto de los trabajadores de las EGT (los gráficos y cuadros se pueden consultar en el anexo). Sin embargo, la comprobación de un comportamiento diverso por parte de las EGT dependiendo de la rama de actividad en la que están insertas, llevan a concluir que un estudio conjunto de este tipo sería de una utilidad menor. Es por esto que se procedió a realizar el análisis de duración para dos ramas seleccionadas: Industria Manufacturera y Transporte. En estas dos ramas se observaron impactos relevantes de la heterogeneidad (ya sea en el nivel educativo, la edad o del sexo) sobre los ingresos de sus miembros. Adicionalmente, los impactos serían de signo contrario. Mientras los coeficientes estimados para la Industria Manufacturera en el Cuadro 3 muestran signos negativos, lo opuesto sucede para las EGT del sector Transporte. Otra característica crucial de estas dos ramas es que son las únicas que acumulan un número aceptable de eventos de fallo en la base de datos.

En el Cuadro 4 se presentan los resultados para los trabajadores de las EGT de la Industria Manufacturera. En las estimaciones que se muestran en las columnas (1) a (3) el evento de fallo utilizado es la salida voluntaria de los miembros de las EGT. En las columnas (1) a (6) un coeficiente con signo positivo indicaría que la mayor salida relativa de ese grupo de trabajadores favorecería que la empresa se haga más homogénea. Lo opuesto sucedería si los coeficientes tienen signo negativo. En la columna (1) se incluyen únicamente las variables que capturan las diferencias en el nivel educativo. Como puede observarse la estimación de dichos coeficientes solo es significativa para los trabajadores menos calificados. Quienes tendrían una menor probabilidad de abandonar la empresa que los otros dos grupos. Ayudando, de esta manera a que la empresa sea más heterogénea. En la columna (2) y (3) se vuelve a realizar la misma estimación, pero incluyendo las variables que capturan las diferentes edades de los miembros. Asimismo, para estudiar el comportamiento de las EGT respecto a la heterogeneidad de género se realizan por separado estimaciones para las EGT con presencia mayoritaria de mujeres (columna 2) y con presencia mayoritaria de varones (columna 3). En ambos casos se incluye una

variable *dummy* que toma el valor 1 cuando el miembro no es del género predominante en la EGT.

En el caso de las EGT cuyos miembros son mayoritariamente mujeres (columna 2) tanto los trabajadores más jóvenes como los de mayor edad tendrían más probabilidades de abandonar la empresa. Haciendo a la EGT relativamente más homogénea. En estas empresas los miembros varones también tendrían más probabilidades de renunciar. Este proceso también ayudaría a hacer a la empresa más homogénea. Sin embargo, estos resultados no se repiten para las EGT con membresía mayoritaria de varones (columna 3). Para estas empresas, serían solo los trabajadores menos educados quienes tendrían más probabilidades de abandonar la EGT. El proceso de salidas voluntarias en este caso ayudaría a que estas EGT se haga también más heterogéneas. El hecho de que se observen resultados diferentes en las EGT dependiendo de si son mayormente conformadas por hombres o por mujeres, sugiere nuevamente que los resultados son diversos dependiendo de las ramas en que estén insertas estas empresas. Ya que, en la Industria Manufacturera, así como en las demás ramas de la economía, la inserción laboral de los trabajadores por rama tiene un fuerte sesgo de género. En el caso de los datos utilizados para estas estimaciones resulta que las EGT de la Industria Manufacturera se insertaron en 36 ramas utilizando la clasificación CIIU a 5 dígitos. De las cuales, en 11 de ellas todas las EGT son mayoritariamente femeninas, en 21 todas las EGT son mayoritariamente masculinas y, solo en 4 ramas coexisten EGT mayoritariamente masculinas con mayoritariamente femeninas.

En los casos de las salidas voluntarias recién comentados, la decisión de quién deja la empresa no está en manos de la EGT. Es por eso que, para tener una mejor aproximación a las preferencias de los miembros en cuanto a la heterogeneidad de su empresa, resulta más relevante observar las salidas no voluntarias. En el caso uruguayo la expulsión de un miembro debe ser aprobada por la mayoría de la asamblea general de la EGT. De modo que este tipo de salida refleja mejor las preferencias de sus miembros. Las estimaciones semiparamétricas de Cox para las salidas no voluntarias en las EGT de la Industria Manufacturera se muestran en las columnas (4) a (6) del Cuadro 4.

Al igual que sucedía con las salidas voluntarias, cuando se toma a todas las EGT de la Industria Manufacturera, el proceso de salidas involuntarias no parecería estar afectado

por el nivel educativo de sus miembros (columna 4). Sin embargo, cuando se realiza dicha estimación separando las EGT según su membresía sea mayoritariamente de varones o de mujeres, se observa que cuando la mayoría de los miembros son hombres, los trabajadores menos educados tienen más probabilidades de ser expulsados haciendo a estas empresas más homogéneas.

Cuadro 4. Estimación Semiparamétrica Cox para trabajadores en EGT de la Industria Manufacturera.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Salidas Voluntarias			Salidas Involuntarias			Cambio de Estatus		
Low Education (\widehat{FE})	-0.285 (0.168)*	-0.264 (0.194)	-0.538 (0.395)	0.665 (0.565)	0.653 (0.918)	2.247 (0.750)***	0.569 (0.333)*	-0.0463 (0.464)	1.404 (0.483)***
High Education (\widehat{FE})	0.0495 (0.131)	0.0469 (0.156)	-0.162 (0.274)	-0.115 (0.380)	0.0134 (0.436)	-0.664 (1.339)	0.392 (0.232)*	-0.181 (0.185)	-0.159 (0.400)
Young		0.352 (0.124)***	0.330 (0.204)		0.176 (0.272)	0.372 (0.340)		1.037 (0.270)***	2.149 (0.371)***
Old		0.334 (0.151)**	0.582 (0.267)**		0.549 (0.366)	0.0127 (0.556)		0.858 (0.327)***	1.308 (0.490)***
Man in a Female WMF		0.331 (0.174)*			0.190 (0.268)			-0.345 (0.224)	
Woman in a Male WMF			0.114 (0.247)			0.388 (0.476)			0.122 (0.452)
Controls by Industry, Cohort and Size	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Subjects	868	533	335	868	533	335	556	320	236
Failures	460	339	121	108	79	29	136	84	52
Observations	27,080	13,907	13,173	27,080	13,907	13,173	9,602	4,999	4,603

Notas Cuadro 4: Modelos de riesgo proporcional de Cox estratificados por empresa. “Low Education (\widehat{FE})” es una variable *dummy* que toma el valor uno cuando el trabajador pertenece al tercio de menor nivel educativo de la empresa. “High Education (\widehat{FE})” es una variable *dummy* que toma el valor uno cuando el trabajador pertenece al tercio de mayor nivel educativo de la empresa. “Young” es una variable *dummy* que toma el valor uno cuando el trabajador pertenece al tercio más joven de la empresa. “Old” es una variable *dummy* que toma el valor uno cuando el trabajador pertenece al tercio de mayor edad de la empresa. “Man in a Female WMF” es una variable *dummy* que toma el valor uno cuando el trabajador es hombre. Esta variable solo se utiliza en las estimaciones de las columnas 2, 5 y 8 en donde solo se consideran EGT con presencia mayoritaria femenina. “Woman in a Male WMF” es una variable *dummy* que toma el valor uno cuando la trabajadora es mujer. Esta variable solo se utiliza en las estimaciones de las columnas 3, 6 y 9 en donde solo se consideran EGT con presencia mayoritaria masculina. Entre paréntesis se muestran los errores estándar robustos ajustados por *cluster* a nivel de trabajador. *Significativo al 10%; **Significativo al 5%; ***Significativo al 1%.

En tercer lugar, se realizan estimaciones semiparamétricas de Cox considerando únicamente a los trabajadores asalariados de las EGT y tomando como evento de fallo su cambio de estatus de trabajador asalariado a miembro o socio de la empresa. Dichas estimaciones se presentan en las columnas (7) a (9) y tienen la misma lógica que las anteriores. El proceso de cambio de estatus de los trabajadores asalariados también resulta de particular interés para aproximarnos a las preferencias de los miembros de las EGT en cuanto a la heterogeneidad de las mismas. Ya que al igual que las salidas involuntarias, la incorporación de un trabajador como socio de la cooperativa, debe ser resuelta por mayoría de la asamblea general. En estos casos, en la medida que los cambios de estatus implican la entrada de nuevos miembros, signos positivos indicaría que la mayor entrada relativa de ese grupo de trabajadores favorecería que la empresa se haga más heterogénea. Lo opuesto sucedería si los coeficientes tienen signo negativo.

En este caso se observa que tanto los trabajadores menos como los más educados tienen más probabilidades de convertirse en miembros (columna 7) ayudando a que la cooperativa sea más heterogénea. Sin embargo, dicho resultado parecería explicarse únicamente por las EGT de mayoría masculina. En estas EGT los trabajadores menos educados tendrían una probabilidad 4.1 veces superior de convertirse en miembros en relación a los trabajadores del “tercio mediano”.⁷ Empresas para las cuales recién vimos que también era más probable que alguien de este mismo grupo de trabajadores fuera expulsado. Ambos resultados combinados sugieren que no hay una intencionalidad sistemática por parte de la mayoría de los miembros de estas EGT de hacer a sus empresas más o menos heterogéneas en los niveles educativos. Cuando consideramos la edad de los trabajadores se observa que, para el conjunto de las cooperativas, tanto los trabajadores más jóvenes como los viejos tienen más probabilidades de convertirse en socios, ayudando a que la EGT sea más heterogénea. Este resultado puede llamar la atención cuando se tiene en cuenta que la heterogeneidad de edades en las EGT de la Industria Manufacturera en su conjunto tendría un impacto negativo sobre los ingresos de sus miembros (ver Cuadro 3).

En el Cuadro 5 se muestran los resultados de la estimación semiparamétrica de Cox para los trabajadores de las EGT del Transporte. Entre estas empresas no hay ninguna que sea

⁷ Al expresar el modelo en términos del logaritmo del hazard ratio, este efecto se calcula como $\exp(1.404)$.

mayoritariamente femenina. Por lo tanto, los resultados generales se corresponden en su totalidad a cooperativas mayoritariamente masculinas.

Para estas empresas se observa que las mujeres tienen menos probabilidades de abandonar la empresa, colaborando de esta manera a que sean más heterogéneas en términos de género. Lo mismo sucede en el caso de las salidas involuntarias, mientras en el caso del cambio de estatus el coeficiente de género no es significativo. Este resultado indicaría que los procesos de salida en las EGT del Transporte ayudan a que estas empresas sean más heterogéneas en términos de género. Respecto a los niveles educativos, los trabajadores menos educados tendrían más probabilidades de convertirse en socios, lo cual también ayudaría a hacer la empresa más heterogénea. Sin embargo, el proceso de salidas involuntarias colaboraría en hacer a estas empresas más homogéneas, ya que los trabajadores de mayor nivel educativo son quienes tiene mayor probabilidad de ser expulsados. Nuevamente, en este caso no se observa un comportamiento sistemático por parte de la empresa para hacer que ésta sea más o menos heterogénea. Por último, en lo que respecta a la heterogeneidad de edades, se observan dos resultados en direcciones opuestas. Por un lado, tanto los trabajadores más jóvenes como los más viejos tendrían más probabilidades de ser expulsados, a la vez que tendrían más chances de convertirse en socios. Sin embargo, los coeficientes en los casos del cambio de status son mayores que los estimados para las salidas involuntarias. A la vez que, entre las cooperativas del sector Transporte, se registraron 399 cambios de estatus y tan solo 44 salidas involuntarias. Por lo tanto, el efecto heterogeneizador de los procesos de cambio de estatus parecería dominar el efecto homogeneizador de las salidas involuntarias. De nuevo, esta diversidad de resultados no son los que a priori se esperarían tienen en cuenta que la heterogeneidad en las tres dimensiones estudiadas tendría efectos positivos sobre los ingresos de sus miembros (ver Cuadro 3).

Cuadro 5. Estimación Semiparamétrica Cox para trabajadores en EGT del Transporte.

	(1)	(2)	(3)	(4)	(5)	(6)
	Salidas Voluntarias		Salidas Involuntarias		Cambio de Estatus	
Low Education (\widehat{FE})	0.00984 (0.241)	-0.0540 (0.253)	0.204 (1.251)	-0.0898 (1.857)	0.612 (0.273)**	0.787 (0.391)**
High Education (\widehat{FE})	-0.0171 (0.253)	-0.0263 (0.255)	1.620 (0.646)**	1.423 (0.680)**	-0.753 (0.497)	-0.461 (0.418)
Young		0.196 (0.117)*		0.706 (0.410)*		3.496 (0.169)***
Old		0.373 (0.222)*		1.794 (0.898)**		2.298 (0.498)***
Woman in a Male WMF		-0.558 (0.259)**		-1.578 (0.757)**		-0.156 (0.221)
Controls by Industry, Cohort and Size	Yes	Yes	Yes	Yes	Yes	Yes
Subjects	1,524	1,513	1,524	1,513	1,118	1,111
Failures	406	404	44	44	339	399
Observations	80,189	79,836	80,189	79,836	19,258	19,161

Notas Cuadro 5: Modelos de riesgo proporcional de Cox estratificados por empresa. “Low Education (\widehat{FE})” es una variable *dummy* que toma el valor uno cuando el trabajador pertenece al tercio de menor nivel educativo de la empresa. “High Education (\widehat{FE})” es una variable *dummy* que toma el valor uno cuando el trabajador pertenece al tercio de mayor nivel educativo de la empresa. “Young” es una variable *dummy* que toma el valor uno cuando el trabajador pertenece al tercio más joven de la empresa. “Old” es una variable *dummy* que toma el valor uno cuando el trabajador pertenece al tercio de mayor edad de la empresa. “Woman in a Male WMF” es una variable *dummy* que toma el valor uno cuando la trabajadora es mujer. Entre paréntesis se muestran los errores estándar robustos ajustados por *cluster* a nivel de trabajador. *Significativo al 10%; **Significativo al 5%; ***Significativo al 1%.

Los resultados del Cuadro 5 para les EGT del sector transporte, al igual que lo observado para la Industria Manufacturera, tampoco estarían mostrando un comportamiento sistemático por parte de las empresas tendiente a favorecer una mayor o menor heterogeneidad interna de las cooperativas.

Algunas limitantes de los resultados recién expuestos podrían surgir de potenciales problemas en los datos a la hora de captar las salidas involuntarias de los miembros de las EGT. De ser así, los registros de la seguridad social en el caso de las EGT podrían registrar como un despido algo que en realidad es una salida voluntaria o parcialmente voluntaria. Este podría ser el caso si un trabajador, estando disconforme con el empleo que tiene en la EGT trata de provocar el despido, modificando su desempeño o relacionamiento con el resto, de modo que los demás miembros terminan optando por echarlo. También podría suceder que los datos estén captando casos de una salida acordada con la empresa, pero que es registrada como despido para que el trabajador pueda recibir el subsidio por desempleo. Ahora bien, es esperable que este tipo de práctica tenga un alcance limitado, ya que las EGT (al igual que las EC) tienen que pagar el despido correspondiente cada vez que registran una salida de un trabajador como un despido.

Otra limitante, como ya fue señalado, se debe a que la consideración de las salidas voluntarias e involuntarias, además de los cambios de estatus no permiten ver la película completa de los procesos de entrada y salida a las EGT. Ya que no hemos podido analizar las incorporaciones de nuevos miembros que no pasan por un período previo como asalariados (478 casos en la Industria Manufacturera y 1830 casos en el Transporte). Esta carencia impide evaluar si el efecto neto, al tomar en cuenta todas las entradas y salidas de la empresa, la hace más o menos heterogénea.

Comentarios finales

En este artículo se estudia el alcance y los efectos de la heterogeneidad en las EGT. El análisis realizado arroja tres resultados principales. En primer lugar, las EGT muestran en promedio mayores niveles de homogeneidad entre sus trabajadores que los observados en las EC. Dicha homogeneidad es aun mayor entre los miembros de las EGT. Sin embargo, se observa una importante diversidad entre las EGT, tanto en los niveles de homogeneidad interna, como en su evolución. Mientras las EC tienden a hacerse más heterogéneas a medida que aumenta su edad, los diferentes grupos de EGT muestran evoluciones dispares según la cohorte y su rama de actividad.

En segundo lugar, para el promedio de los trabajadores de las EGT se observa un diferencial salarial positivo en relación al ingreso que obtendrían en una EC. La heterogeneidad en los niveles educativos y en las edades de los miembros de las EGT tiene un impacto positivo sobre dichos diferenciales (la heterogeneidad de género no tuvo efectos significativos). Sin embargo, este efecto no es uniforme entre las EGT. Para algunas ramas de actividad, como por ejemplo para la Industria Manufacturera, el efecto de la heterogeneidad de sus miembros sobre sus diferenciales de ingresos resultó ser negativo. Mientras lo opuesto sucedió para los trabajadores de las EGT del sector Transporte. La evidencia encontrada es inconsistente con la hipótesis de Hansmann (1996) según la cual la heterogeneidad de los miembros de las EGT no solo tendría siempre efectos negativos sobre su desempeño, sino que además dichos efectos serían de tal magnitud que se convertirían en el principal motivo de la baja presencia de las EGT en las economías actuales. Los resultados encontrados indicarían que la heterogeneidad entre los miembros de las EGT puede tener efectos negativos en sus ingresos en algunos casos, pero no en todos. En la medida que haya un grupo de EGT para las cuales la heterogeneidad tenga efectos positivos, la predicción catastrófica de Hansmann no se estaría cumpliendo. La realidad se estaría mostrando como algo más complejo. Los impactos de la heterogeneidad de sus miembros sobre el desempeño de las EGT son diversos y parecerían depender de las diferentes tecnologías y estructuras organizacionales que se den estas empresas.

En tercer lugar, no se encuentra evidencia de que los procesos de salidas involuntarias, así como los de cambio de estatus (que son los que requieren aprobación de la EGT)

contribuyan siempre de manera sistemática a hacer a las cooperativas más o menos homogéneas. Incluso para las EGT del Transporte, para las cuales la heterogeneidad de sus miembros tiene en promedio efectos positivos sobre sus ingresos, no se observa que los procesos de cambios de estatus o salidas involuntarias se aprovechen para hacer a la empresa más heterogénea. O bien, otros elementos son considerados de mayor relevancia por la mayoría de sus miembros a la hora de decidir la composición de la empresa, o bien, los promedios estimados no permiten capturar la diversidad entre las empresas a la interna de estas ramas.

Una vez que se concluye que la heterogeneidad entre sus miembros puede tener impactos diversos sobre el desempeño de las EGT, resulta de particular interés llegar a comprender de qué depende que dicho impacto pueda ser positivo o negativo. Está más allá del alcance y de las posibilidades de este trabajo, el análisis de los determinantes de que la heterogeneidad sea algo positivo para las cooperativas. Pero, resultaría de suma importancia poder conocer si algunos de esos determinantes están bajo el control de las empresas y pueden, por lo tanto, ser alterados por las cooperativas. O si, por el contrario, están más allá del control de las EGT y dependen de aspectos como la tecnología utilizada en cada rama. Por otro lado, es necesario evaluar el impacto de la heterogeneidad utilizando mejores indicadores del desempeño de las empresas. En este trabajo se ha utilizado el diferencial de ingresos experimentado por sus trabajadores, pero sería más conveniente poder analizar el impacto sobre la productividad de las cooperativas. Evidencia de otros trabajos sugiere que el desempeño de las EGT es similar (o incluso mejor) que el de las EC (Craig et al. 1995; Fakhfakh, Pérotin, y Gago 2012; Pencavel 2013; Montero 2022).⁸ Según Young-Hyman, Magne y Kruse (2022), estas diferencias positivas a favor de las EGT se darían principalmente en ramas intensivas en conocimientos. Pero aún no hay trabajos que analicen directamente el impacto de la heterogeneidad de sus miembros sobre la productividad de las EGT. Nuevas investigaciones hacen falta para poder conocer cómo interactúan la tecnología y la estructura organizacional de las EGT con la heterogeneidad de sus miembros y cómo esta afecta su desempeño.

⁸ Por una revisión sobre las diferencias de productividad entre EGT y EC ver Dow (2018).

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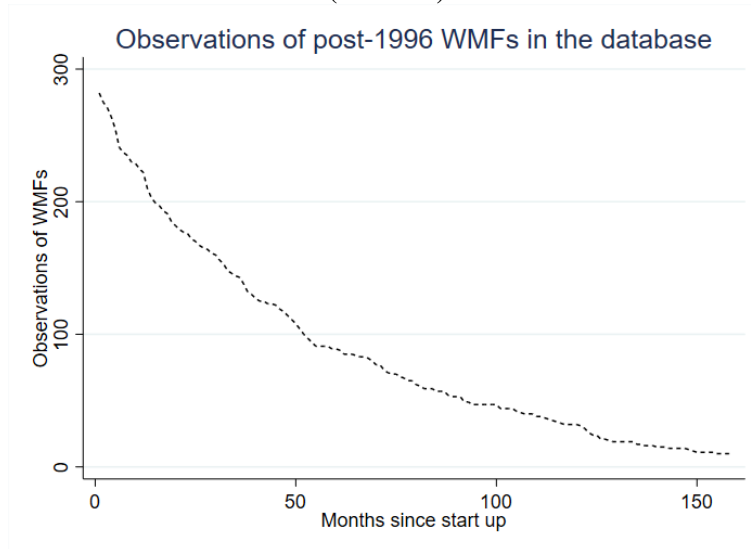
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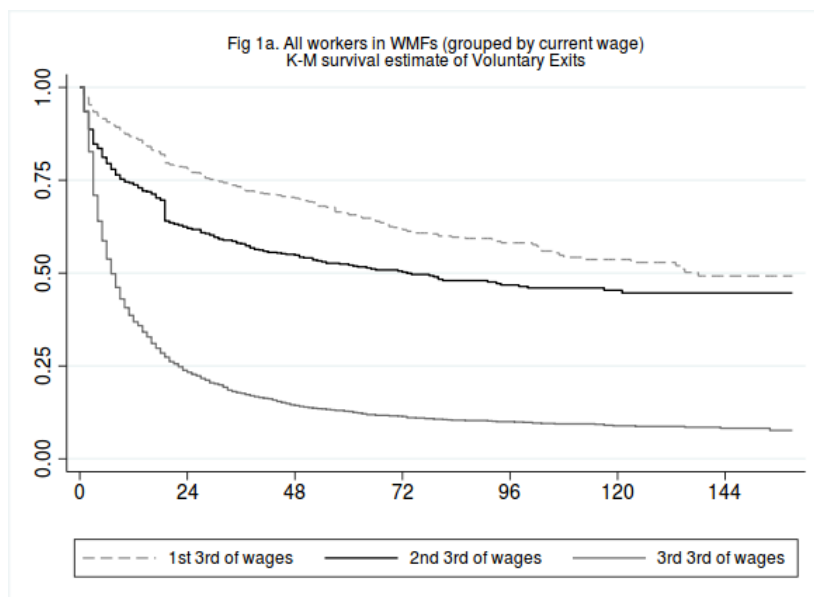
Anexo

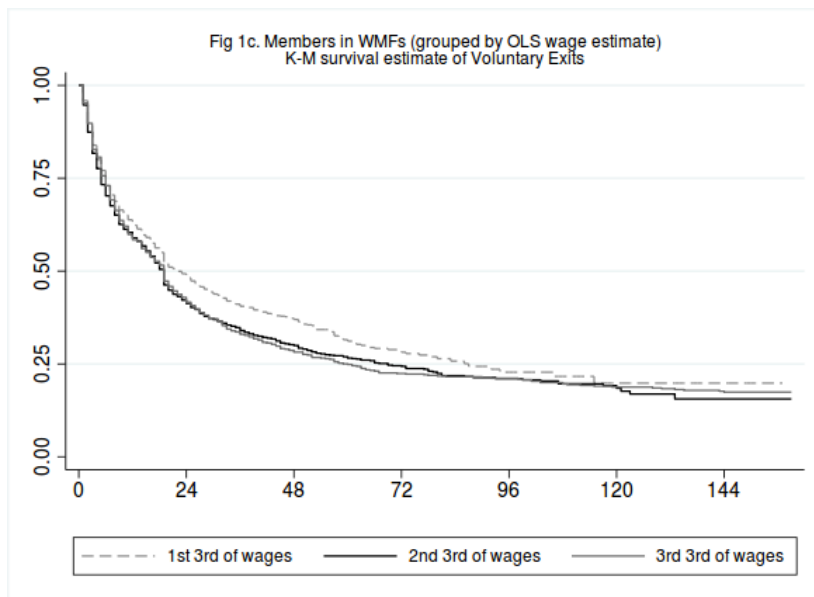
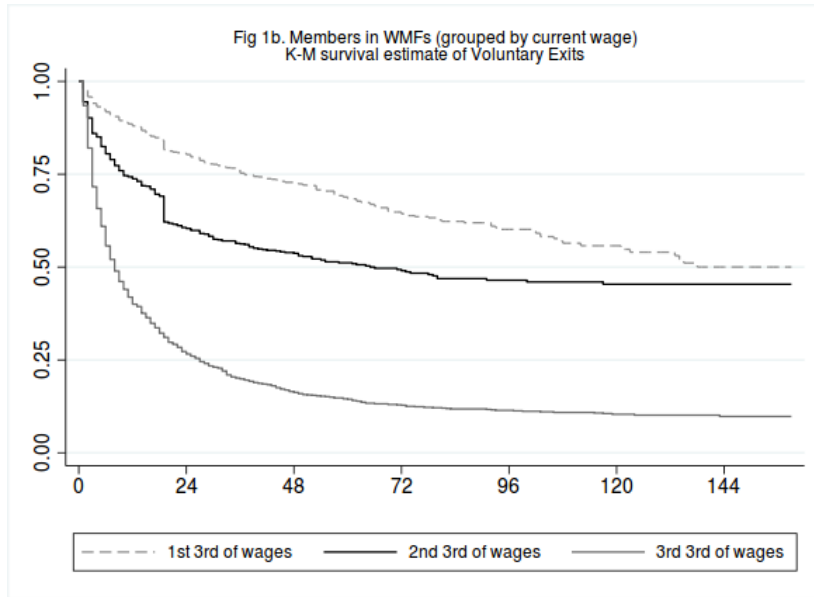
Gráfico A1. Cantidad de observaciones de las EGT creadas con posterioridad a 1996 según su edad (en meses)

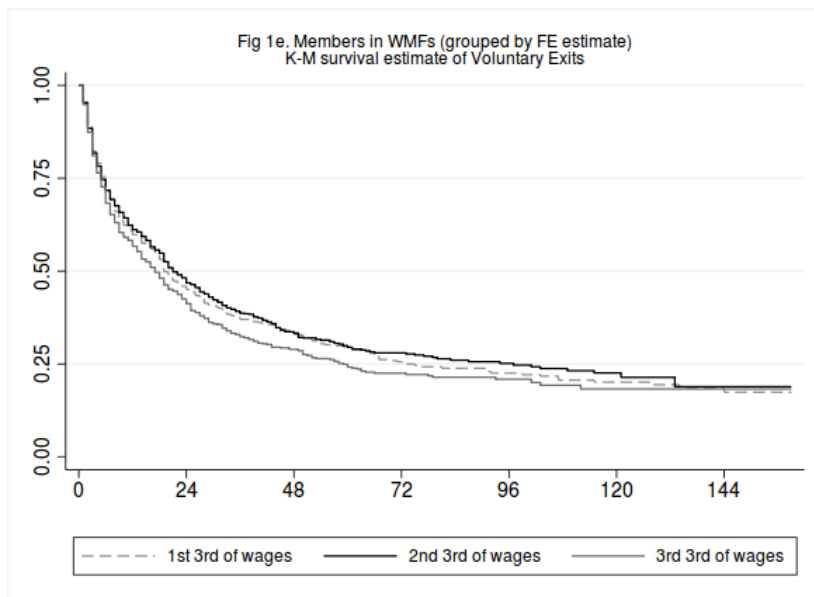
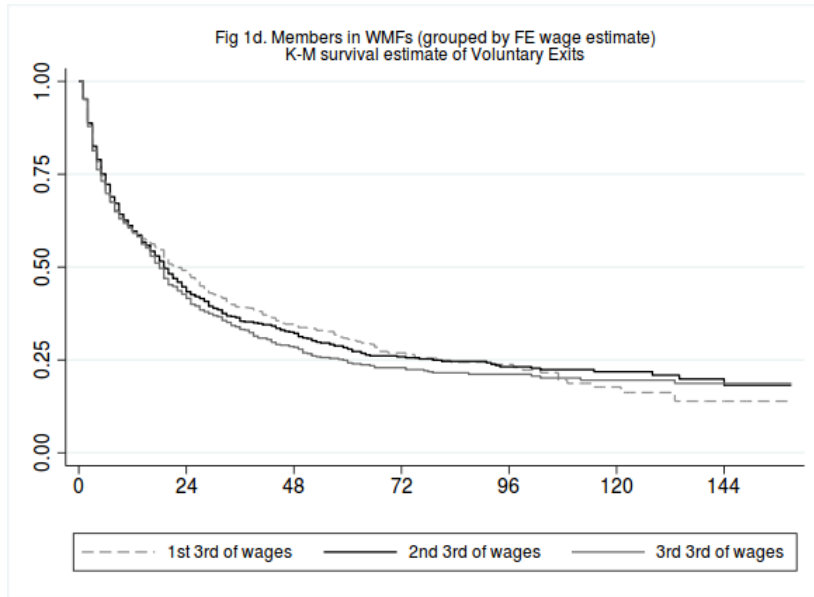


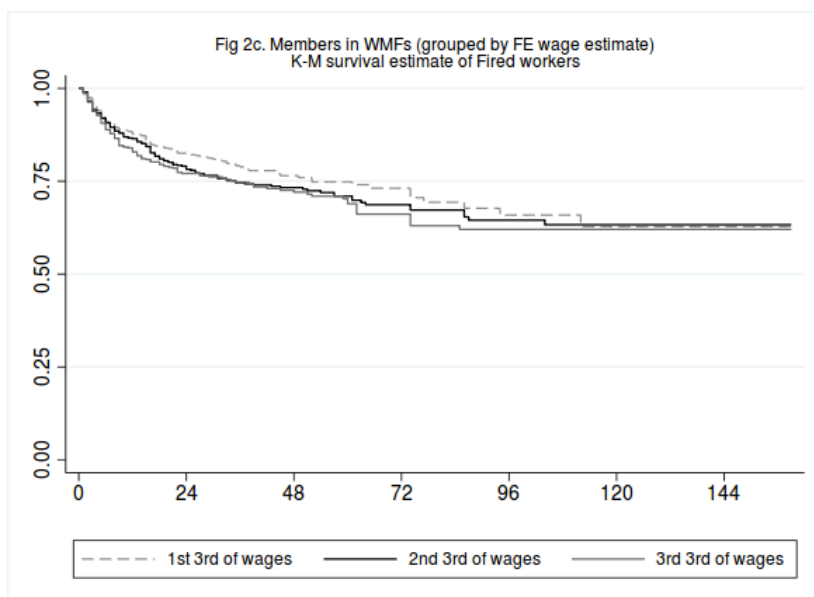
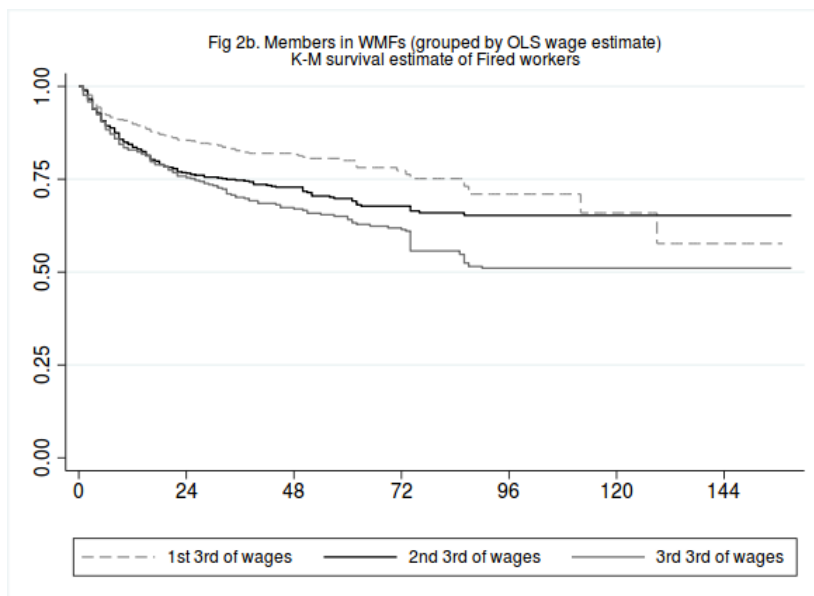
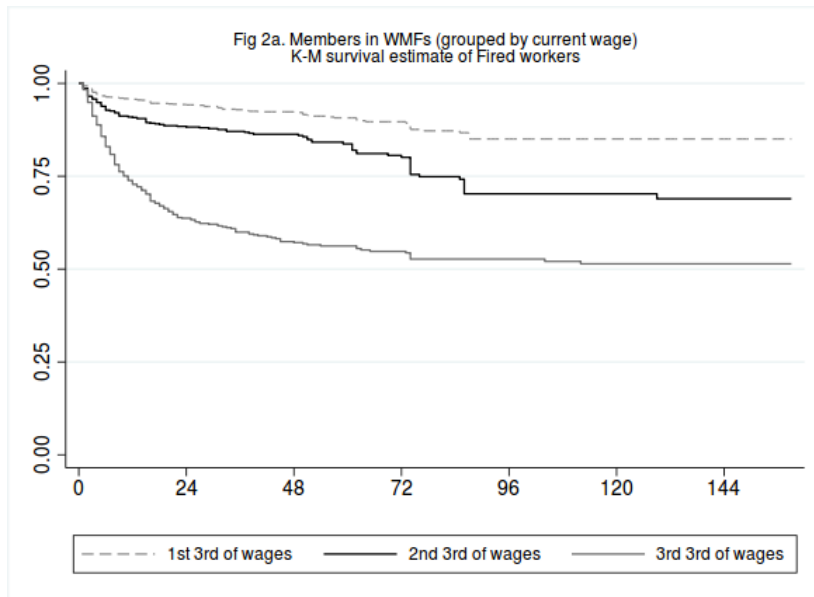
Fuente: Elaboración propia en base a datos del BPS

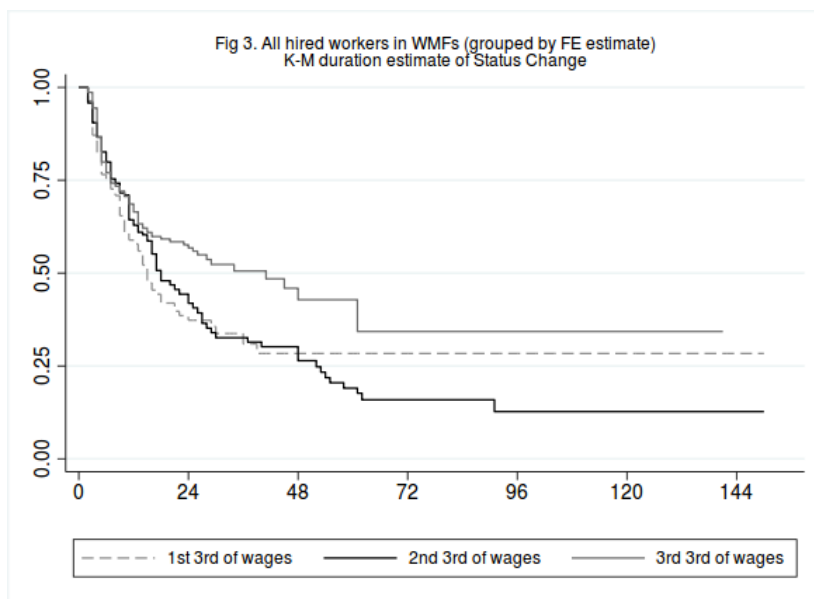
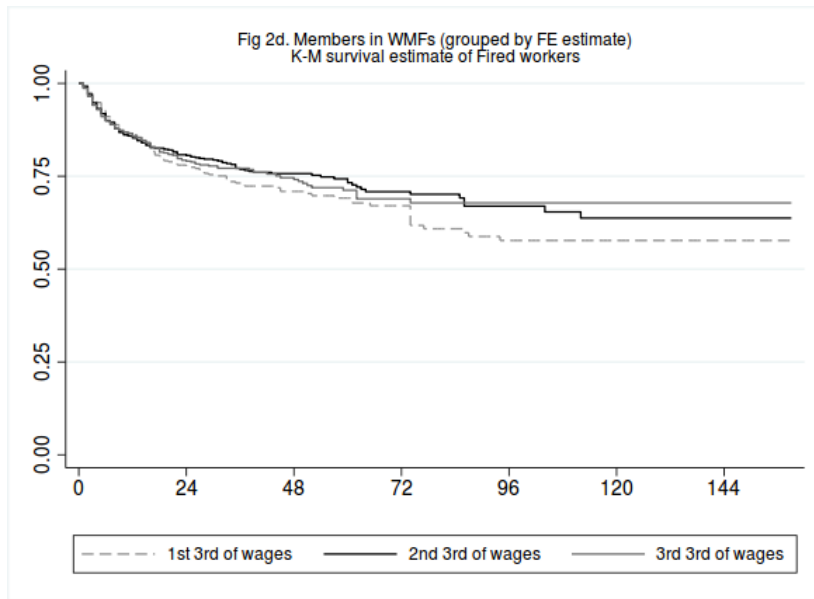
Gráficos A2. Funciones de supervivencia de trabajadores en EGT según variables seleccionadas. Se consideran 3 tipos de eventos de fallo: 1- Salidas voluntarias del trabajador de una EGT; 2- Salidas involuntarias de un trabajador de una EGT; y 3- Cambios de estatus de un trabajador asalariado de una EGT a trabajador socios de la misma.

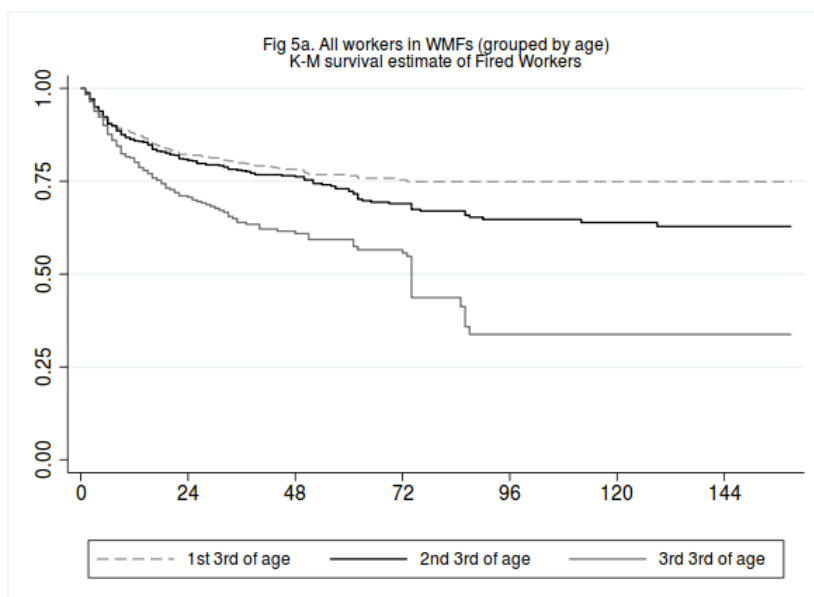
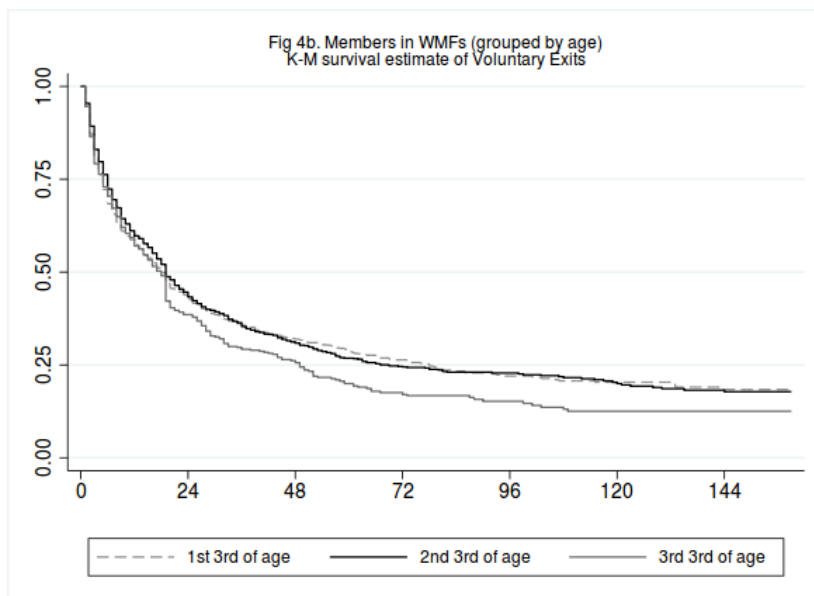
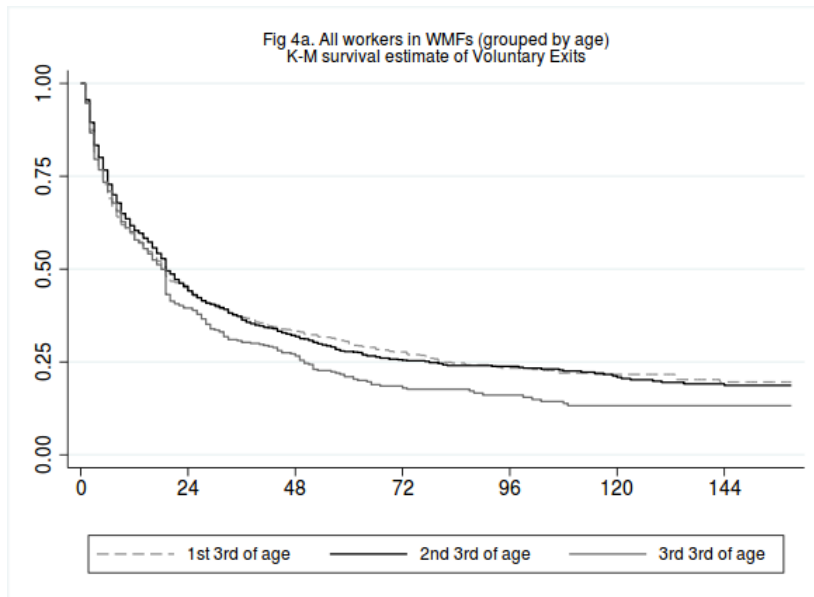


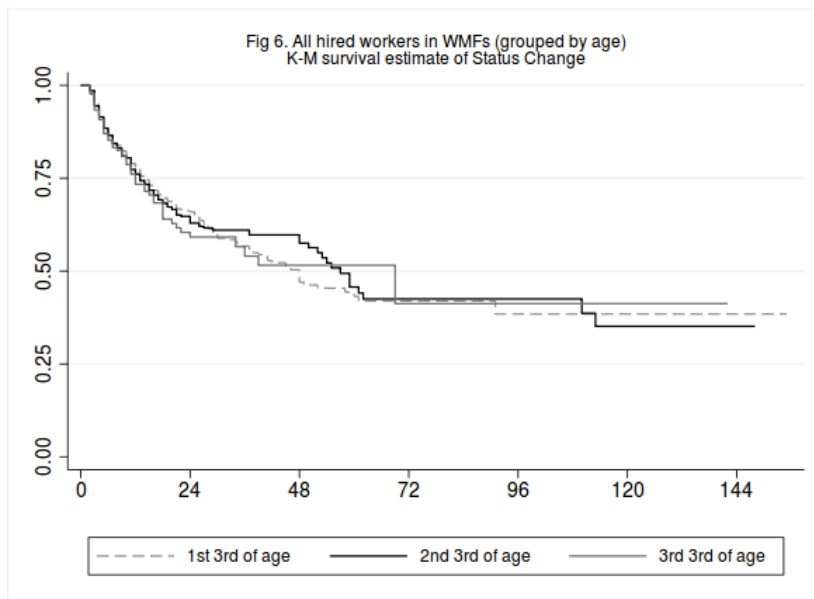
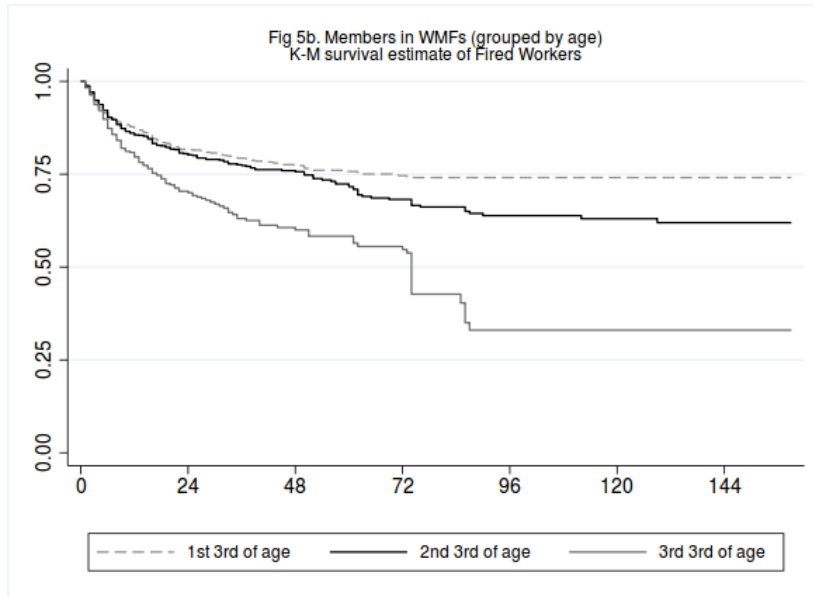


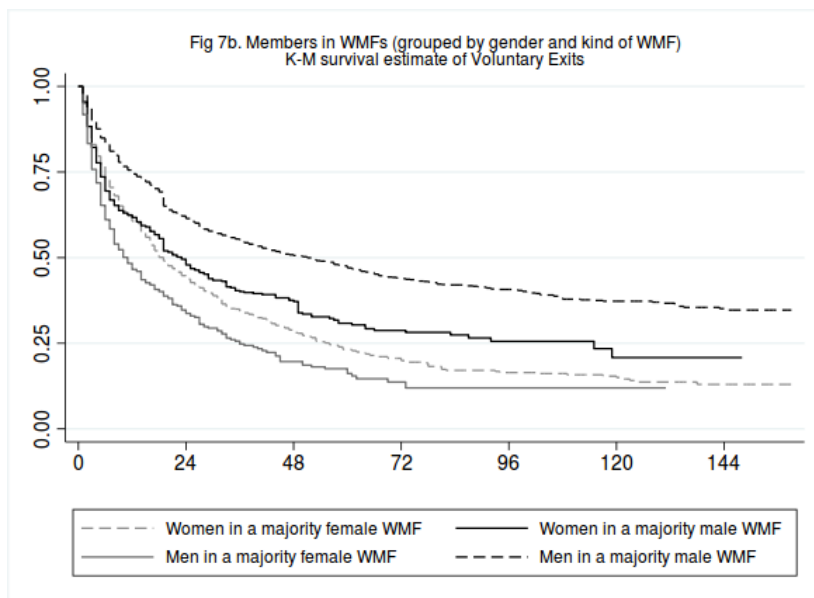
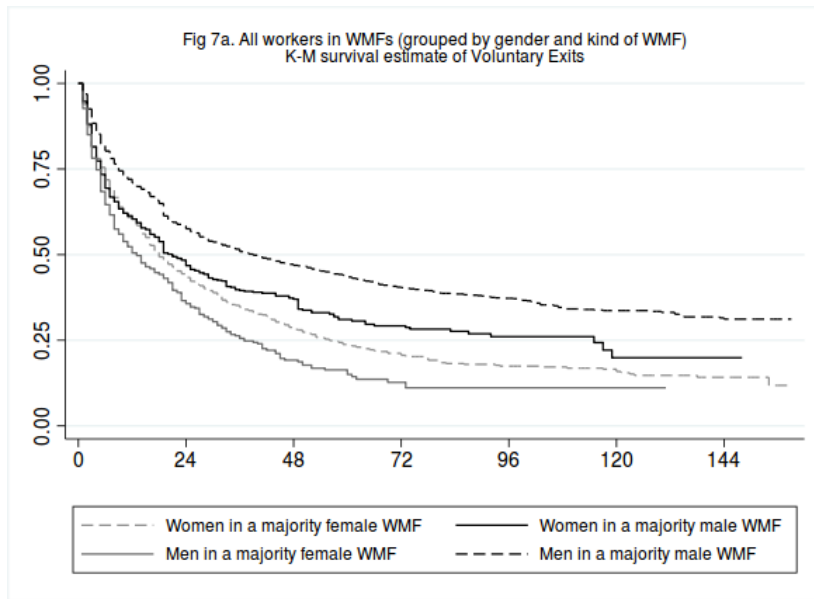


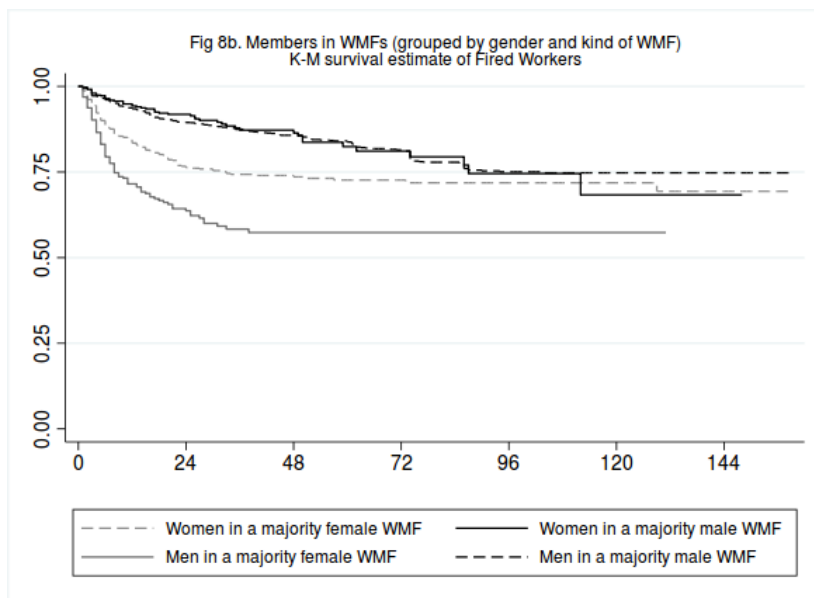
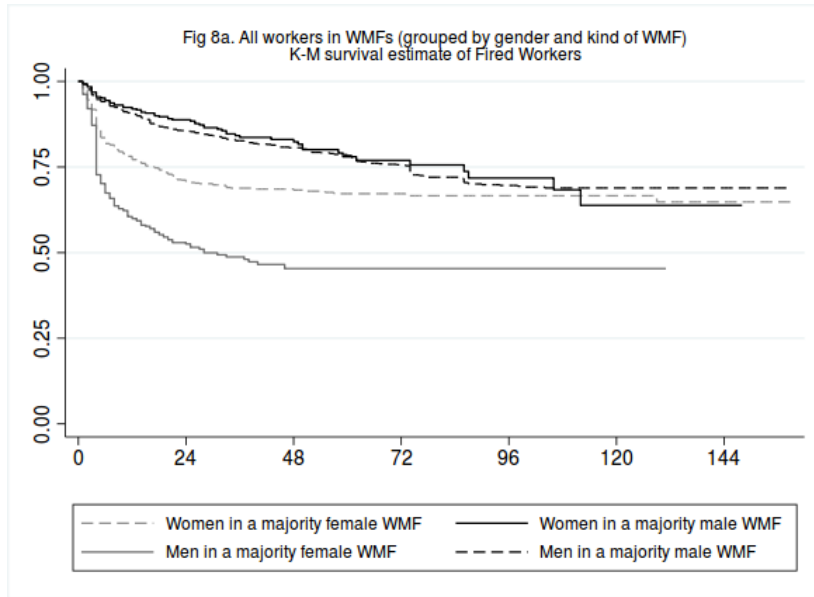


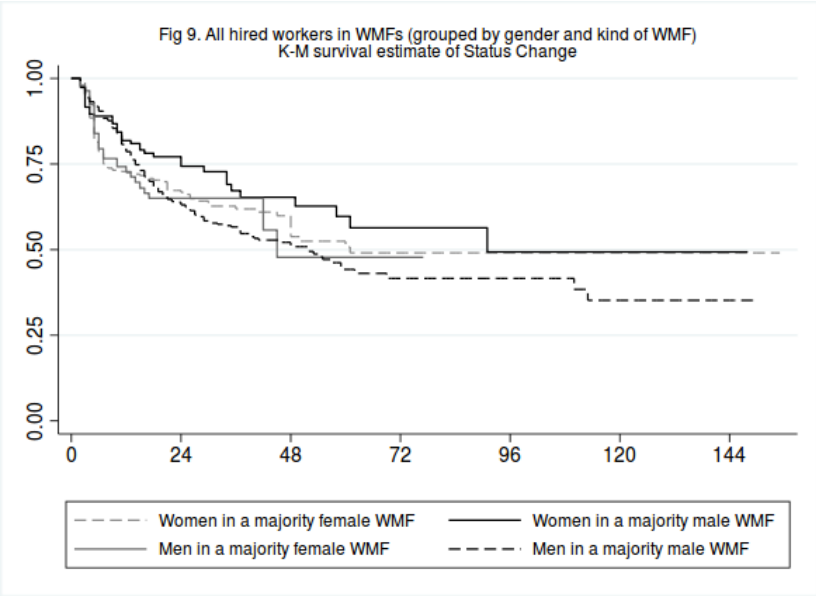












Cuadro A1. Estimación Semiparamétrica Cox para salida voluntaria de los trabajadores en EGT.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low Productivity (W)	-0.787 (0.0304)***	-0.760 (0.0302)***	-1.356 (0.0570)***						
High Productivity (W)	-0.044 (0.0319)	-0.0369 (0.0319)	0.0864 (0.0474)*						
Low Productivity (\widehat{W}_{OLS})				0.0696 (0.0422)*					
High Productivity (\widehat{W}_{OLS})				-0.0957 (0.0824)					
Low Productivity (\widehat{W}_{FE})					0.0698 (0.0432)				
High Productivity (\widehat{W}_{FE})					0.0767 (0.0485)				
Low Education (\widehat{FE})						-0.0137 (0.0500)	0.0217 (0.0519)	0.0640 (0.0825)	-0.0290 (0.0689)
High Education (\widehat{FE})						0.186 (0.0435)***	0.119 (0.0466)**	0.193 (0.0715)***	0.141 (0.0600)**
Young							0.191 (0.0428)***	0.169 (0.0650)***	0.170 (0.0576)***
Old							0.0418 (0.0574)	0.0454 (0.0901)	0.0620 (0.0758)
Man in a Female WMF								0.201 (0.0666)***	
Woman in a Male WMF									0.0153 (0.0666)
Controls by Industry, Cohort and Size	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Subjects	15,429	15,429	6,421	6,421	6,421	6,421	6,421	2,710	3,711
Failures	7,120	7,120	2,926	2,926	2,926	2,926	2,926	1,299	1,627
Observations	336,950	336,950	151,460	151,460	151,460	151,460	151,460	39,753	111,707

Notas Cuadro A1: Entre paréntesis se muestran los errores estándar robustos ajustados por *cluster* a nivel de trabajador.

Cuadro A2. Estimación Semiparamétrica Cox para salida involuntaria de los trabajadores en EGT.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low Productivity (W)	-0.230 (0.0377)***	-0.230 (0.0377)***	-0.855 (0.0982)***						
High Productivity (W)	0.060 (0.0427)	0.083 (0.0426)**	0.319 (0.0877)***						
Low Productivity (\widehat{W}_{OLS})				-0.111 (0.0842)					
High Productivity (\widehat{W}_{OLS})				0.0448 (0.0900)					
Low Productivity (\widehat{W}_{FE})					-0.0189 (0.0857)				
High Productivity (\widehat{W}_{FE})					0.0812 (0.0893)				
Low Education (\widehat{FE})						0.0540 (0.0895)	0.00524 (0.0963)	-0.101 (0.144)	0.00695 (0.136)
High Education (\widehat{FE})						0.0826 (0.0852)	0.0645 (0.0936)	-0.0107 (0.132)	0.316 (0.129)**
Young							0.154 (0.0892)*	0.0892 (0.126)	0.127 (0.126)
Old							0.263 (0.0983)***	0.173 (0.140)	0.488 (0.146)***
Man in a Female WMF								0.174 (0.109)	
Woman in a Male WMF									-0.488 (0.170)***
Controls by Industry, Cohort and Size	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Subjects	15,429	15,429	6,421	6,421	6,421	6,421	6,421	2,710	3,711
Failures	3,755	3,755	795	795	795	795	795	422	373
Observations	336,950	336,950	151,460	151,460	151,460	151,460	151,460	39,753	111,707

Notas Cuadro A2: Entre paréntesis se muestran los errores estándar robustos ajustados por *cluster* a nivel de trabajador.

Cuadro A3. Estimación Semiparamétrica Cox para cambio de status de los trabajadores asalariados en EGT.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low Productivity (W)	-0.165 (0.106)	-0.127 (0.106)	0.0387 (0.112)						
High Productivity (W)	0.0128 (0.127)	0.0389 (0.127)	0.0559 (0.134)						
Low Productivity (\widehat{W}_{OLS})				0.0344 (0.130)					
High Productivity (\widehat{W}_{OLS})				0.197 (0.167)					
Low Productivity (\widehat{W}_{FE})					0.0929 (0.0966)				
High Productivity (\widehat{W}_{FE})					-0.0935 (0.121)				
Low Education (\widehat{FE})						0.322 (0.109)***	0.412 (0.135)***	0.665 (0.232)***	0.369 (0.163)**
High Education (\widehat{FE})						-0.113 (0.106)	-0.493 (0.122)***	-0.783 (0.172)***	-0.273 (0.157)*
Young							2.624 (0.126)***	2.845 (0.201)***	2.572 (0.165)***
Old							2.185 (0.172)***	2.230 (0.249)***	2.100 (0.247)***
Man in a Female WMF								-0.0507 (0.174)	
Woman in a Male WMF									0.0900 (0.181)
Controls by Industry, Cohort and Size	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Subjects	3,209	3,209	3,209	3,209	3,209	3,209	3,209	1,307	1,902
Failures	604	604	604	604	604	604	604	207	397
Observations	38,764	38,764	38,764	38,764	38,764	38,764	38,764	12,649	26,115

Notas Cuadro A3: Entre paréntesis se muestran los errores estándar robustos ajustados por *cluster* a nivel de trabajador.

Worker Take Overs: A Comparative Analysis of Employee Buyouts, other Worker-managed Firms, and Conventional Firms in Uruguay*

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Abstract

The economic crisis experienced by many developed countries over the past decade, and the crisis at the beginning of the 21st century in Argentina and Uruguay, both saw the emergence of the phenomenon of so-called recovered firms (RFs), or employee buyouts of failed capitalist firms (CFs). While it is obvious that one of the objectives sought by these workers is to keep their jobs, the subsequent performance of these firms is unclear. Are RFs more likely to fail than other worker managed firms (WMFs) or than CFs? Do RF workers get higher incomes than their peers in other WMFs or in CFs? This analysis is based on a linked employer-employee panel data set from Uruguayan social security administrative records. The main findings are that RFs survive longer than other WMFs or than CFs. However, RF workers receive incomes substantially lower than those of their peers with similar observable characteristics at other WMFs or at CFs. This income differential is explained partly by a brain drain process of the more qualified and younger workers who do not participated in the worker takeover.

Keywords: Employee Buyouts, Worker Takeovers, Labor-Managed Firms, Survival, Wage differentials

JEL Classification: D22, J54, P13

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1. Introduction

During the crises experienced by several developed economies in recent years, as well as the crises experienced in Argentina and Uruguay between 2000 and 2003, the not entirely new phenomenon of so-called recovered firms (RF) emerged. RFs are a type of worker-managed firm (WMF) arising from failed capitalist firms (CF) that are reopened under the control of their workers.

WMFs can be defined as firms that are ultimately controlled by their workers (Dow, 2003). Their members have the same control rights regardless of their capital contributions, meaning that every worker has one and only one vote.

WMFs are formed through two fundamental mechanisms. They can be created *from scratch* by a group of workers (WMF-FS) or from the *conversion* of a conventional firm. The latter form includes RFs, although it could also include the reorganization of a financially healthy firm through voluntary consent of the owner and its employees. In the case of Uruguay, all CF conversions into WMFs correspond to failed capitalist firms.

In 2012, the Uruguayan government created the Development Fund (FONDES in Spanish), a specific financial instrument to promote WMFs. Between 2013 and 2015, FONDES used public resources to lend 70 million dollars (more than 0.1% of Uruguayan GDP) to 20 WMFs. Of these 20 firms, 18 were RFs. By 2018, 4 of these companies had closed, most had problems repaying their debt, and FONDES had lost 65 of the 70 million loaned.

Evidently, the fund suffered from poor evaluation of investment projects. The Uruguayan government's concern over job losses could explain the bias of its loans being granted mostly to RFs. But what elements should have been taken into account in the project evaluation? Is the fact of being an RF enough to trigger a warning signal? According to different hypotheses, RFs have a specific feature that must be considered. Specifically, these firms always inherit part of the characteristics of the failed conventional firm: technology, people, working and managerial practices, social norms, knowledge, reputation, debts, and links with other agents like customers, suppliers, banks, etc. Some of these characteristics are assets the firm wants to preserve (but is not necessarily able

to) and others are liabilities the firm needs to overcome (but again may not be able to). Hence, should a different performance be expected from RFs compared to other WMFs or compared to CFs? This article provides information useful in answering these questions.

I provide a new analysis comparing the performance of RFs with WMFs created from scratch. Within the economic literature, empirical studies on WMFs are scarce, especially those that seek to perform a comparative analysis of WMF performance according to how they were created. Additionally, the results presented here are useful for the analysis of the wage losses incurred by workers when they lose or change jobs, particularly when it is associated with losses of specific human capital. Likewise, this study provides relevant information about RFs as a labor policy instrument against unemployment.

The literature review shows both arguments for why RFs might perform better than other WMFs and arguments in the opposite direction. For this reason, I will try to answer the following question: Do RFs tend to survive as long as other WMFs or CFs? (Section 5). However, just the longer survival of a firm does not mean its performance is better. Its workers may have incentives to keep a firm running with low levels of productivity, under circumstances in which a CF would have already been closed. In this way, being an RF could be a factor that hinders the closing processes of inefficient businesses, process which is a necessary for the dynamic efficiency of market economies. However, there is no data that allows an analysis of comparative performance based on the productivity of these firms. But there is information to study the performance of these firms based on the income differentials of their workers. Hence, the second question that will be answered: Are the incomes obtained by RF workers different from those of their peers at other WMFs or at CFs? (Section 6). Finally, if differences are observed by groups of firms, many arguments suggest that they may be due to the initial characteristics of the RFs or those inherited from the CFs that preceded them. These arguments give rise to the third question: What part of these differences in RF workers' income is associated with the preservation of characteristics of the closed CF or other initial characteristics of the RFs? (Section 6) Before answering these questions, in Section 2 a theoretical and empirical review is presented. In Section 3, contextual information on Uruguayan WMFs is provided and the data are described; Section 4 presents descriptive results. Finally, in Section 7 conclusions are presented.

2. Theoretical and empirical review

Possibly the main goal of workers at RFs who are keeping their firms running is to preserve their jobs.⁹ However, there is little information on some of the most relevant characteristics of those jobs that are preserved, like stability or incomes. Both elements are clearly associated with the subsequent performance of these firms.

The WMF has attracted the attention of various classic economists, such as Karl Marx, John Stuart Mill, Leon Walras, and Alfred Marshall. Since the mid-twentieth century, an extensive theoretical literature has been generated trying to explain the small presence of WMFs in contemporary market economies. A large part of this literature has been devoted to the comparative analysis of the performance of WMFs and CFs. Some analyses have focused on the intrinsic characteristics of these firms, such as their employment and wage determinants (Ward 1958; Domar 1966; Vanek 1970; Steinherr & Thisse 1979; Brewer & Browning 1982), their capital accumulation and investment decisions (Furubotn & Pejovich 1973; Vanek 1977; Pejovich 1992), their collective decision-making processes (Hansmann 1996; Kremer 1997), the possibility that WMFs will degenerate into CFs (Ben-Ner 1984; Miyazaki 1984), or the problem of incentives and the risk of opportunistic behavior arising in work-teams (Alchian & Demsetz 1972). Other explanations have focused on external factors that become barriers to the development of WMFs, such as possible negative discrimination in the credit market (Bowles & Gintis 1994).¹⁰

Previous research indicates that most WMFs are created from scratch and only a small share are created from the conversion of a CF (these conversions represented 11% of the WMFs in Uruguay (Alves et al 2012) and 16% in France (Pérotin 2006). According to Ben-Ner (1988a), only a very small fraction of these conversions involve financially sound CFs. According to Dow (2018), this can be explained by various factors. Credit

⁹ In addition to the conservation of their jobs, workers who run an RF could be motivated by several factors that have been highlighted mainly in the discussion of the normative advantages of WMFs compared to CFs. According to different points of view, the workers in WMFs will not be exploited, will be less alienated and more motivated, could reach higher levels of self-realization (because they would have a greater knowledge and involvement in the productive process of the firm and would also participate collectively in decisions on the issues that directly affect them), and will have access to ownership of the firm (Dow 2003).

¹⁰ A recent evaluation of the empirical literature on the subject can be found in Pencavel (2013) or Dow (2018).

market constraints obviously make it easier for workers to acquire a conventional firm experiencing troubles than a successful one, since the former are cheaper. However, the conversion of a sound CF into a WMF may not occur even without funding constraints. First, risk aversion could make workers prefer to invest in a diversified portfolio, instead of concentrating their investment of financial and human capital in the same firm. Second, uncertainty about the profitability levels of the future WMF could prevent the conversion from happening. Even if the expected profitability is greater for the WMF than the CF, if the analysis of its profitability is a public good for the workers, and its cost must be covered with individual contributions, then due to possible free-rider behaviors the provision could be suboptimal and the conversion could never occur. According to Dow, this second limitation can be solved through a union (or public incentives) that makes the commitment between workers viable.

The model developed by Ben-Ner (1984) serves to explain the emergence of RFs from closing CFs. According to this model, successful WMFs (in which members get a higher income than they would as salaried employees in a CF) tend to replace their members with salaried workers. In this way, in the long term they would stop being a WMF and become a CF. However, if WMFs could exploit some organizational advantage that would lead them to have higher productivity than CFs, WMFs could be stable in industries that are not profitable for CFs. The aforementioned also applies to activities that cease to be profitable during recessions or as a result of technological changes or market conditions. In this way, according to Ben- Ner (1988b), in periods of recessions it would be more likely to observe the restructuring of CFs with financial problems and their conversion into RFs. Moreover, workers may be more likely to accept an income cut to improve a firm's viability as a condition of achieving greater job security. Instead of leaving the gains resulting from these concessions to the owners of the CF, they would prefer to take over the company themselves.

However, the economic literature on the comparative analysis of RFs, WMF-FSs, and CFs is scarce, having generated more interest in other social sciences. The economic literature features both arguments indicating that RFs may have a better performance and survival capacity than WMF-FSs as well as arguments in the opposite direction.

Pérotin (2004) points out different factors that could help RFs survive longer than WMFs created from scratch. First, the RF could inherit a relatively larger scale from the preexisting failed CF. Meanwhile, constraints on access to financing could lead WMF-FSs to start their operations at a smaller than optimal size. This could put these new firms in a disadvantaged situation relative to their competitors. Secondly, RF members could be more experienced and have more interpersonal knowledge, which would generate learning economies compared to other new firms. Pérotin estimates hazard functions for all French cooperative firms (SCOPs) that were created during the period 1977-1993.¹¹ Her work distinguishes WMFs by origin, finding evidence that cooperatives created from scratch have a greater risk of closure compared to RFs. WMF-FSs could enter the market with an inefficient scale and/or face higher initial costs for internal management, links with suppliers, and the creation of reputation and legitimacy among customers and financial institutions.

However, some studies consider factors that could prevent RFs from exploiting the benefits mentioned above. First, most administrative and managerial personnel from the previous CF generally do not participate in the creation process of the RF, or they leave early on (Hochner et al. 1988; Rebón y Kasparian 2018). Moreover, this drain of the most qualified workers will increase as the time elapsed until the RF starts its activities is extended. As long as the younger and more qualified workers have better outside job opportunities, their opportunity cost of waiting can be particularly high. At the same time, these are the workers who have strategic knowledge and information related to the management of the firm and its relationships with customers and suppliers. The defection of these workers from the RF makes it lose some of the potential advantages of being an RF compared to a WMF-FS (Camilletti et al. 2005; Riero 2009; Martí 2006; Martí, Thul, & Cancela 2014). According to Ruggieri and Vieta (2015), the 311 Argentinian RFs they studied experienced an average inactivity lapse of 7 months. Additionally, the “rescue” of these failed CFs could be a process with long inactivity spans that could generate the loss of previous customers, even more so if these customers have access to alternative supply lines of similar quality (Camilletti et al. 2005; Ruggieri & Vieta 2015). On the other hand, the uncertainty related to the rescue process could negatively affect access to

¹¹ A comparative analysis of the survival of WMFs and CFs in Uruguay can be found in Burdín (2014).

funding from suppliers of the RF. In addition, the new RF must sometimes bear the stigma inherited from the previous CF of being a bankrupted firm (Pires 2017).

Second, if younger workers are more prone to defect, an RF with older members could face an additional problem. If the median worker's time horizon (the expected length of their tenure within the firm) is short, in an RF organized under collective property, the firm could experience major inefficiencies in investment decisions. This phenomenon would worsen, for example, if many workers are close to retirement age. In these cases, workers might prefer the distribution of surpluses in the form of higher current wages rather than most alternative forms of investment (Furubotn & Pejovich 1973; Vanek 1977; Pejovich 1992). The hardships of raising capital among their members and renewing aging machinery have been pointed out as one of the main difficulties of Argentinian RFs (Rebón 2007).

Third, RFs are in many cases operating in industries with competitive difficulties. Just this fact could be a problem, because businesses fail for a reason. The institutional framework of WMFs can make viable the process of voluntary income cuts for workers at an RF, whereas the same adjustment would not be feasible in the institutional framework of a CF, due to its inability to establish a credible agreement between employer and employees (Bowles 2004). An adjustment of this type could increase the chances of survival for the RF compared to the pre-existing CF. However, the persistence of the factors that led to the failure of the previous CF (e.g. trade liberalization, technological changes, etc.) imply that the RF may not be viable either (Vieta et al. 2016).

On the other hand, if the workers of a failed CF have an important accumulation of specific human capital, an RF could be viable even in an industry in which a CF would choose to close. According to Amarante et al (2014), on average, workers who lose their jobs in Uruguay still experience a wage loss of 14% after one year and 2% after five years, while those workers who switched industries after their job loss, who probably have the highest losses of specific human capital, experience a wage loss of 40% a year after separation and 12% after five years. If the wage reduction that workers at a CF would experience because of job separation and loss of specific human capital is greater than the fall in the firm's profits, its workers would have an incentive to buy the firm. As long as there is a range of values for the firm's profits at which a CF would choose to close

(profits below its opportunity cost), but at which its workers would obtain an income higher than their reservation wage—plus the opportunity cost of their investment—if they buy the firm, the workers would prefer to keep the firm running. In these cases, the workers could take charge of a viable RF with a lower return for their investment in physical assets to alternative uses, but in which they keep their jobs. According to Chaplinsky et al (1998), employee involvement in firm buyouts is more likely with high worker investment in firm-specific human capital.

Ben-Ner and Jun (1996) provide a model explaining the rationale for a conversion from a CF to an RF. According to these authors, in cases of collective bargaining between a union and a firm's managers, the possibility of conversion to an RF can work as a screening mechanism when the firm's profitability is private information held by the CF's managers. If the future prospects of the firm are known only to the managers, as long as those future prospects are good, managers will accept a wage agreement beneficial to the workers (even in an unfavorable current situation for the firm), but they will not accept the buyout of the firm by the workers. However, the inverse is also true. If future prospects are bad, managers would prefer to sell the firm to its workers before accepting their wage demands. Hence, workers would only end up owning firms with poor future prospects. Unless workers are able to generate improvements in productivity compared to the previous CF, the new RF will be more likely to fail.

However, WMFs could exploit some comparative advantages they have compared to CFs, particularly in relation to a higher worker motivation, better use of worker knowledge, and lower monitoring costs. This could be the case for both peer monitoring among members (Dow y Putterman 2000) or easier monitoring of managers (Hueth y Marcoul 2015). This is one reason that WMFs could be viable in industries with low profitability for CFs. WMFs may also be successful if they specialize in high quality products, for which worker knowledge is more important. In industries where product differentiation is a competitive strategy, such knowledge could be particularly relevant (Smith 1994). Such advantages could make the old firm viable, but now in the form of a WMF.

However, the possible existence of an organizational inertia from the previous CF with its old, more hierarchical management practices, could prevent the emergence of the

participatory structures required to exploit the advantages mentioned for RFs. Such inertia could also hinder organizational changes or necessary innovations (Hannan and Freeman 1984). Some studies have pointed out that RF members may reproduce work organization methods used in the previous CFs (Camilletti et al. 2005; Jensen 2016). In this matter, it may be more likely that WMF-FSs have more room to implement a more participatory or innovative organization of work in comparison to RFs.

The reviewed literature provides both arguments that point out reasons for RFs to perform better than other WMFs, as arguments in the opposite direction. But all highlight how critical could be the way the RF is created and what happen during the inactivity lapse since the previous CF cease its activity to the moment the RF starts its own. If the firm manage to get rid of the inherited ballast and, at the same time, keeps the most valuable assets of the closed firm. The following sections will explain how I try to analyze if there are performance differences between RFs, other WMFs and CFs and how these differences are affected by the firm's inheritance.

3. Data and context

The present article studies whether the way a WMF is created is a variable that affects the subsequent survival and performance of the firm. Additionally, I study whether the conservation by the RF of some characteristics of the closed CF improves its performance or chances of survival.

To perform this study, I use a linked employee-employer monthly panel dataset from the administrative records of Uruguayan social security. These records include, first of all, a panel of all workers at Uruguayan cooperatives registered with social security. It includes more than 1.2 million monthly observations corresponding to 30,743 workers and 526 producer cooperatives (PCs). The data reports workers' monthly information: earnings, both for hired employees and cooperative members (including distributed dividends for WMF members), sex, age, tenure at the firm, and link with the firm (if the worker is an owner or an employee). It also includes information on the firm at which each worker has her or his job, such as the employment level, legal form (if CF or PC), and industry (five-digit ISIC code, Rev. 4). The data cover the period April 1996-December 2013. For

workers at CFs, I use a sample of 10% of the workers registered with the Uruguayan social security agency (more than 20 million observations of 200,000 workers).¹² The sample includes workers of all industries and all legal forms. Finally, the data also include information on a sample of 20% of the CFs registered in social security records (more than 205,000 firms), including the data of all of their workers. The inclusion of this third database is because the sample of workers, although it contains information on the firms they work for, is not representative of Uruguayan firms because it is biased towards larger businesses. I restrict the sample, excluding public and rural workers so that only workers at nonagricultural private firms are included.

The evolution of the Uruguayan economy during the 1996-2013 period had three different phases. From 1996 to 1998, the economy grew at relatively high rates. In 1999, it entered a recessive phase, with a deep crisis in 2002 (after a financial crash). During that year, the unemployment rate reached 17%. However, the economy recovered in 2003, followed by the most prosperous period in the last 60 years. At the beginning of the period, collective bargaining was unusual, but in 2005 the government decreed mandatory industry-level collective bargaining across all industries. This policy, jointly with the fall of the unemployment rate to its lowest value in 50 years (6.7% in 2013), significantly improved the bargaining power of workers at CFs.

The distinction between a WMF and a capitalist enterprise seems simple. The former is a firm in which the workers are the owners of the capital and have control of economic decisions, while a CF is controlled through authority by those who provide the capital. According Ben-Ner *et al.* (1993) and Dow (2003), a WMF can be defined as an economic organization in which workers are the ones who have the ultimate control over decisions. These decisions are made democratically following the criteria of "one person one vote." This definition implies that the existence of salaried workers is considered a deviation from a pure WMF model.

The Uruguayan legal framework identifies producer cooperatives. However, it is a common practice among cooperatives to hire employees, implying a departure from the theoretical definition of a pure WMF. In fact, an average 58% of PC workers were

¹² The Uruguayan social security agency is the Banco de Previsión Social (BPS).

employees in 2013. To distinguish among these cases, Uruguayan law defines WMFs as PCs in which the employees do not represent more than 20% of all members. WMFs are allowed to surpass this threshold for a short time because of changes in seasonal demand; however, to obtain a payroll tax exemption, they must adhere to the legal limit.¹³ According to Uruguayan law (Law No. 17.794 of 2004 and Law No. 18,407, 2008 [General Law of Cooperatives]), payroll tax is 22.5% for hired employees in CFs or WMFs and 15% for members of WMFs.¹⁴ Using this delimitation, approximately 50% of PCs are defined as WMFs. Econometric estimates will be performed for these WMFs only.

Some organizational characteristics of Uruguayan WMFs are established by law, but a broad range of rules are defined by the firms themselves. All WMFs have a general assembly that selects the managers as well as a board that supervises the firm. Regardless of a member's capital contribution, every member has one vote. Members can own the assets of the firm either individually or collectively. In the first case, members have tradeable capital shares, while in the second case, members can usufruct as long as they work at the firm. Collective ownership is the most frequent option among Uruguayan WMFs: according to Alves et al (2012), less than 10% of WMFs in Uruguay are owned by their members through individual shares. Unlike the laws in countries such as France or Italy, Uruguayan law does not include other constraints on WMFs related to the hiring of salaried workers, except for those that apply to CFs. Employees of WMFs have the same rights hired workers have in CFs. The firm can pay different wages to members and employees, and the latter do not enjoy returns on capital.

The data do not distinguish RFs from other WMFs. However, based on the information available in the databases, it is possible to identify which WMFs are RFs using a series of criteria. In the data, worker records include information not only about their membership in a WMF, but also their previous and subsequent employment trajectories. This fact allows us to have information about the previous firms at which the worker was employed before joining the WMF. Using this information, a WMF that meets the following criteria will be considered a recovered firm:

13 This operative delimitation is the same used in other works on Uruguayan WMFs (Burdín y Dean 2009; 2012; Burdín 2014; Alves, Burdín, y Dean 2016; Burdín 2016; Dean 2019).

14 A review of Uruguayan law on cooperatives can be found in Moreno (2009).

- 1- More than 50% of the founding members of the WMF worked previously at the same CF.
- 2- The CF where they worked previously reduced its workforce by at least 90% either before or in the first year of the WMF's.¹⁵
- 3- The CF where employees worked previously and the new WMF both operate in the same industry.

The closure of a CF is identified in the database by the fact that there are no more records of the firm. Despite this, it is not possible to be sure that it is a failed firm. Hypothetically, it could also be a profitable CF that was acquired by its workers, and its absence in the social security records is due to the change of legal form of the firm. Therefore, this is a potential source of measurement error. However, among the consulted members of the National Association of Recovered Firms (ANERT) and the Uruguayan Federation of Production Cooperatives (FCPU), there are no known cases of this type for Uruguay. Therefore, it is reasonable to assume that all observed conversions are cases of failed CFs. The creation and subsequent performance of RFs and other WMFs was not influenced by the creation of FONDES in 2012 (mentioned in the Introduction) because its first loans were granted at the end of 2013, which is also the end of the period under analysis.

4. Descriptive results

In this section, I present descriptive information about the different groups of firms being analyzed. Insofar as it is not possible to identify RFs created before 1996, descriptive statistics present separately information on new firms and old ones (those created after or before 1996, respectively). In the case of new firms, there is a distinction between RFs, WMF-FSs, and CFs, while in the case of old firms the information presented only discriminates between WMFs (including both RFs and WMF-FSs) and CFs. As Table 1 shows, compared to other new firms, RFs are usually larger than the WMF-FSs and CFs, which are of similar size. That might happen because RFs have inherited part of the

¹⁵ Originally, the second identification criterion for RFs was stricter: to be an RF, the previously-existing CF must have closed before the new WMF was created. However, the administrative records include several cases in which the periods during which the CF still worked and the RF had begun its activities overlapped. This problem made it necessary for me to make case by case observations in the database, ultimately choosing to consider a firm an RF if the CF had reduced its workforce by at least 90% within 1 year of the RF being created.

previous CF's scale. On the other hand, workers at CFs and WMF-FSs show greater female participation than those at RFs.¹⁶ Additionally, workers at RFs usually get similar earnings to those of other new firms (WMF-FSs or CFs). Regarding worker age, no clear difference is appreciated between RFs and WMF-FSs (except at the end of the period), but when compared with employees of CFs, the latter are always younger.¹⁷ Likewise, the workers at old WMFs have in general a higher average tenure than those at old CFs, while there is no clear trend among new firms. Finally, compared to new firms of the same type, old firms tend to have older workers, with higher tenure and earnings (see Table 1).

¹⁶ The high female participation rate observed among RFs in 1997 is due to the industry composition of the few cases at the beginning of the period (2 of the 3 firms were textiles).

¹⁷ A similar result was found by Alves et al (2012) using different data.

Table 1. Descriptive Statistics: Linked Employer–Employee Panel Data.

	1997					2005					2013				
	New RF	New WMF-FS	Old WMF	New CF	Old CF	New RF	New WMF-FS	Old WMF	New CF	Old CF	New RF	New WMF-FS	Old WMF	New CF	Old CF
<i>Firm-Level Information</i>															
Number of firms	3	10	140	4,033	12,328	10	73	95	10,329	5,695	17	117	61	18,943	4,268
Average size (number of workers)	7.0	8.3	27.3	8.0	18.8	35.3	15.7	33.0	11.3	28.4	58.5	18.8	48.5	14.6	45.11
Average share of female workers	61.1%	33.0%	22.6%	39.6%	38.2%	30.9%	45.3%	20.9%	40.5%	37.7%	32.0%	51.5%	29.1%	43.3%	38.9%
Average monthly earnings	9.6	7.5	16.8	10.6	13.8	7.0	8.4	13.5	9.5	12.7	16.6	15.6	20.4	16.1	21.9
Average standard deviation of earnings (SD)	3.7	0.7	3.1	4.6	6.2	1.6	2.7	3.3	3.7	5.5	4.5	5.8	6.5	7.0	10.1
Average age	37.2	37.6	43.8	34.0	36.5	41.9	42.2	47.4	36.9	39.5	44.1	42.6	49.3	37.4	40.2
Average standard deviation of age (SD)	10.1	8.8	9.6	9.7	10.5	9.2	9.7	9.3	9.7	10.5	10.2	10.1	9.0	10.4	11.3
Average job tenure	0.9	0.8	4.8	1.4	4.9	1.6	2.5	8.3	2.5	7.5	4.2	3.3	11.4	2.9	7.4
Average standard deviation of tenure (SD)	0.2	0.2	2.3	1.3	3.7	0.5	0.9	5.1	1.8	5.5	1.1	1.4	7.2	2.3	6.6
<i>Worker-Level Information</i>															
Number of firms	21	83	3,827	3,441	22,971	353	1,145	3,143	9,363	15,472	995	2,197	2,957	19,236	19,525
Average share of female workers	61.9%	43.4%	11.8%	46.3%	48.8%	29.7%	46.0%	12.3%	46.8%	54.0%	25.6%	46.8%	14.1%	47.5%	58.8%
Average monthly earnings	6.4	6.8	37.4	13.3	25.9	8.2	9.3	33.7	11.2	22.5	24.9	17.6	45.4	21.1	35.4
Standard deviation of earnings (SD)	6.6	4.0	20.5	12.5	20.6	5.0	7.6	17.1	10.9	15.8	10.0	13.4	19.9	18.1	23.8
Average age	38.2	39.5	42.0	32.4	37.9	42.8	41.0	45.1	35.8	40.9	44.5	39.6	45.0	39.3	40.8
Standard deviation of age (SD)	9.8	10.9	10.8	11.2	11.7	11.4	12.5	10.4	11.5	11.5	10.0	12.8	10.7	13.0	11.5
Average job tenure	1.1	0.7	7.3	0.6	7.7	1.2	2.1	11.4	2.2	10.6	2.4	2.2	11.5	2.9	9.7
Standard deviation of tenure (SD)	0.5	0.4	7.4	0.5	7.9	1.5	2.2	8.1	2.5	9.0	3.4	2.8	9.1	3.3	9.8

Source: Author's calculations using social security records.

Note. Summary statistics are reported in October of each year. Tenure is measured in years. Wages are measured in thousands of pesos uruguayos deflated by the official consumer price index. RF = recovered firm (conversion from a failed CF), WMF-FS = worker-managed firm created from scratch, CF = capitalist firm.

To complement the previous information, data on the initial characteristics of firms created after 1996 are presented. In the case of RFs, the characteristics of the new firms are shown, as well as information on the failed CFs (Table 2, Column 1). As shown in Table 2, the initial size of the RFs is bigger than that of other firms, possibly because they inherited part of the scale of the previous CFs. This result is observed even though only an average of 35.3% of the former workers at the failed CF join the new RF, indicating that RFs have some difficulty in preserving the full scale of the previous firm. This problem is worse among the workers in the last quintile of wages at the pre-existing CF. In that case, only 25.9% of workers are among the RF's founding members. These figures could be a sign of a brain drain problem, as pointed out by Rebón & Kasparian (2018).¹⁸ Additionally, the brain drain problem could be worsened by the long periods of inactivity (the lapse between the closure of the previous CF and the beginning of the new RF's activities), which averaged 14.4 months. On the other hand, it should be noted that the average age of RF founding members is 42 years old, which is 3 years older than for WMF-FSs and 7 years older than for the CFs' initial workforce. This result, as mentioned in the literature review, could impact the firms' willingness to take risks and invest. Finally, average tenure in previous jobs or in the industry as a whole is higher among the founding members of RFs. These strong differences, in addition to the average age, could be an indication that these workers have a higher accumulation of human capital that is specific to the firm or industry and very limited outside options (Camilletti et al. 2005; Riero 2009; Martí 2006; Martí, Thul, y Cancela 2014).

Table 2. Initial Characteristics of RF, WMF-FS and CF. Firm-level information

	RF	WMF-FS	CF
Inactivity lapse (months)	14.4 (22.9)		
Share of former coworkers	0.35 (0.28)		
Share of former coworkers of the 5th quintile	0.26 (0.23)		
Final Failed CF size	141 (185)		
Initial size	37 (61)	17 (31)	6.3 (12.6)
Initial Average age	42 (5.8)	39 (7.1)	35 (10)

¹⁸ Another possible explanation for the low percentage of workers from the fifth quintile of wages who join the RF could be that WMFs require fewer personnel to perform monitoring tasks or that the former CF had an excessive managerial staff.

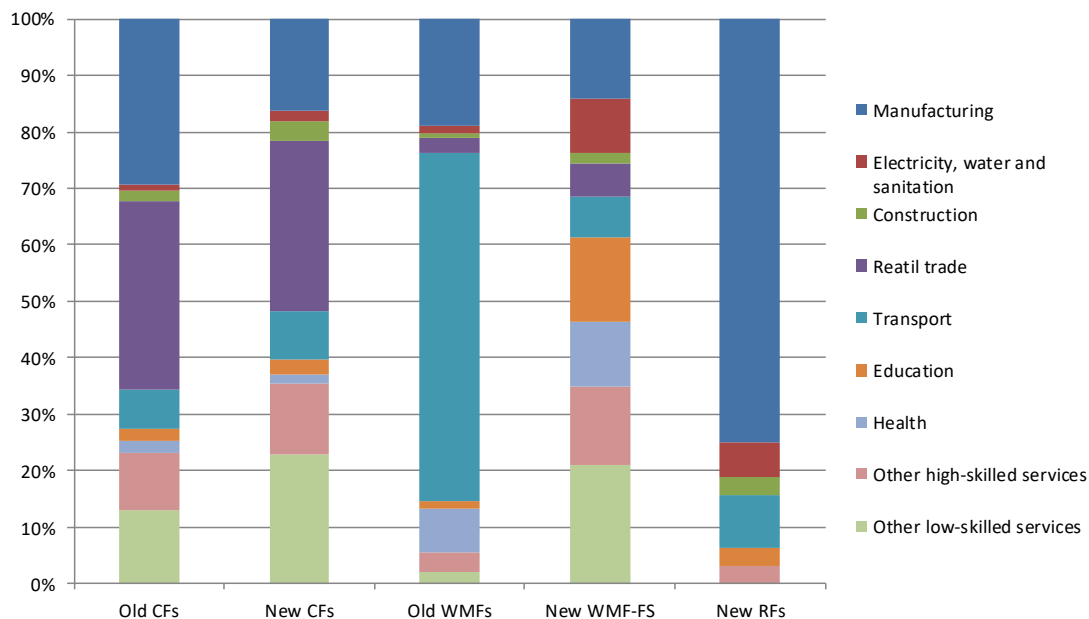
Average initial industry tenure	6.7 (6.2)	1.7 (2.3)	1.8 (3.6)
Average tenure in previous job	6.3 (5.9)	1.6 (2.3)	1.6 (3.4)

Source: Author's calculations using social security records.

Nota. Summary statistics are reported for the first year of each firm. Standard errors reported in parentheses. Tenure is measured in years. For WMFs (both RFs and WMF-FSs), figures reported are for founding members (excluding hired employees). For CFs, age and tenure reported are for hired employees.

Figure 1 shows the industry composition of firms. Maintaining the same criteriom used to present the data in Table 1, firms created before 1996 (old) and those created afterwards (new) are considered separately. The industry composition of CFs experienced less dramatic changes than those of WMFs, but highlights include the loss of participation of Manufacturing and the weight gained by Low-skilled Services. On the other hand, among WMFs, the industry composition changed dramatically. While 60% of the old WMFs operate in Transport, among new WMFs such industry share is less than 10%. At the same time, the industry composition of new RFs and new WMF-FSs is radically different as well. Among the first group, Manufacturing has a share of 75%, while among WMF-FSs, the share is less than 15%. This result is probably explained by the fact that many RFs arise in industries that produce tradable goods and face strong competition from imported goods (Vieta et al 2016). Among WMF-FSs, there is an important share of High-skilled Services (including Health and Education), representing 40% of new WMF-FSs.

Figure 1. Industry composition of firms by group and creation date



Source: Author's calculation using social security records.

5. Survival

I estimate Kaplan-Meier (1958) survival and hazard functions to perform a comparative analysis of the survival of RFs; the variable of interest is the time elapsed between the time the firm was created (entry) and when it closed (exit). Firms' spells in the database can be complete or right-censored. The latter occurs when the entry date is known, but its exit has not yet occurred at the end of the observation period. The length of the spell $t > 0$ for a firm is a realization of a random variable T with cumulative distribution function $F(t)$ and a probability distribution function $f(t)$. The survival function is defined as $S(t) = 1 - F(t)$ and represents the probability of surviving beyond time t . $f(t)$ is the slope of the failure function $F(t)$ such that $f(t) = \lim_{\Delta t \rightarrow 0} P(t \leq T \leq t + \Delta t) / \Delta t = \partial F(t) / \partial t = -\partial S(t) / \partial t$.

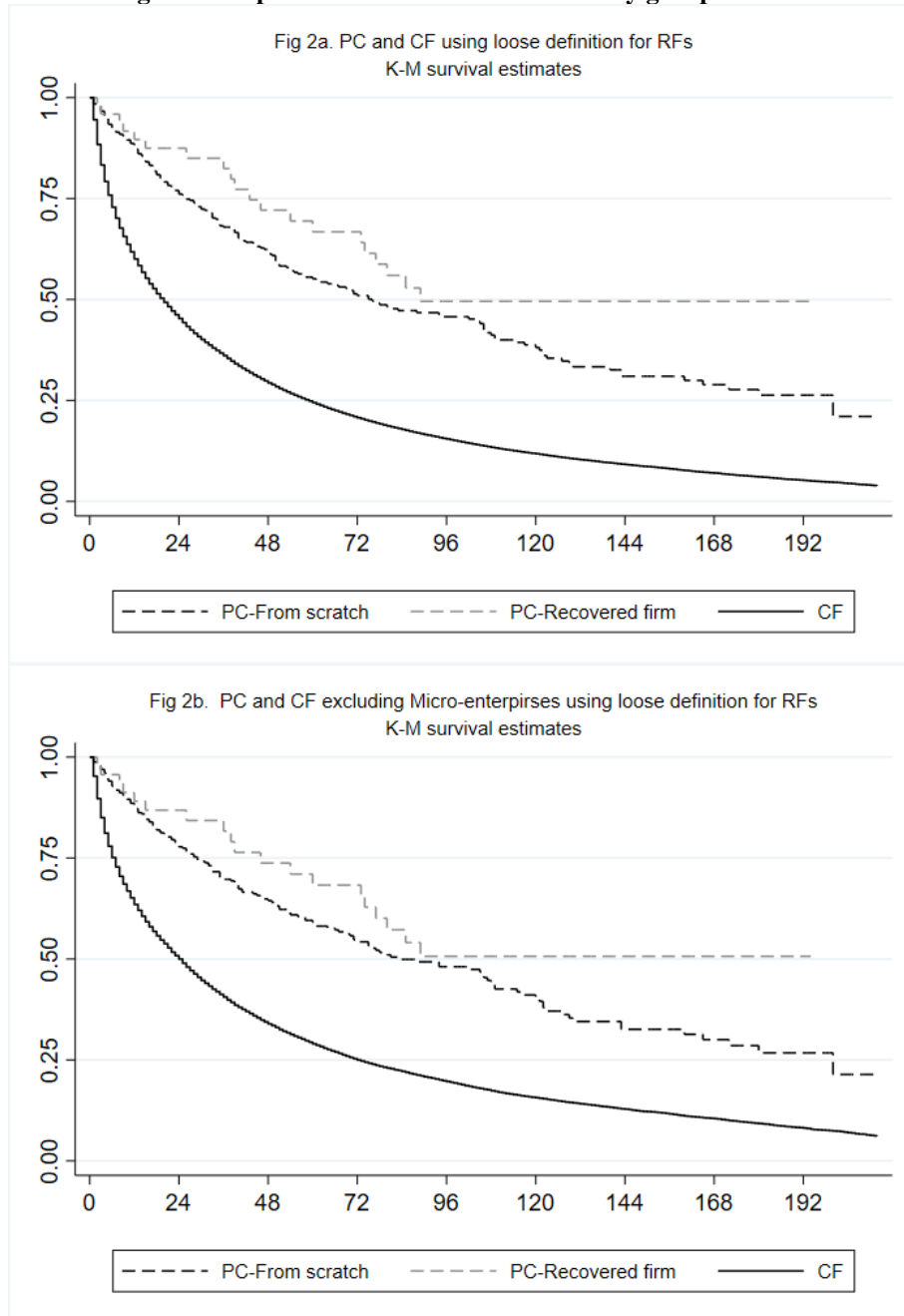
Both $S(t)$ and $F(t)$ satisfy the properties of probabilities. $S(t)$ is bounded between zero and one and is strictly decreasing for all t , being equal to one at the beginning of the observed trajectory and zero at infinity. The hazard rate $h(t)$ is defined as the instantaneous chance of failure (exit) at time t . It is the conditional probability that the firm closes at time t , conditional on the fact that the firm has not exited prior to t , such that $h(t) = f(t) / 1 - F(t) = f(t) / S(t)$. Finally, the cumulative hazard rate $H(t)$ is defined as the integral of the hazard rate over $(0, t)$, such that $H(t) = \int_0^t h(u) du$ (Jenkins 2005).

The results, shown in Figure 2, indicate that RFs have on average a much higher survival than both CFs and other WMFs. In turn, WMF-FSs have a survival slightly higher than CFs.¹⁹ Figure 2a shows the survival functions for all CFs and production cooperatives regardless of size. At the same time, I use an undemanding criterion for RFs, since all PCs are classified in this way if at least 10% of the founding members had belonged to the converted CF. In Figure 2b, micro-enterprises are excluded (firms whose initial size was less than five workers). Figure 2c also excludes all PCs with an initial share of employees larger than 20%, hence using only CFs and WMFs for estimation. Finally, in Figure 2d, all WMFs in which less than 50% of the founding members were not coworkers in the previous CF are not considered RFs. In each group of estimated functions, incrementally restrictive criteria were used, reducing the number of firms used

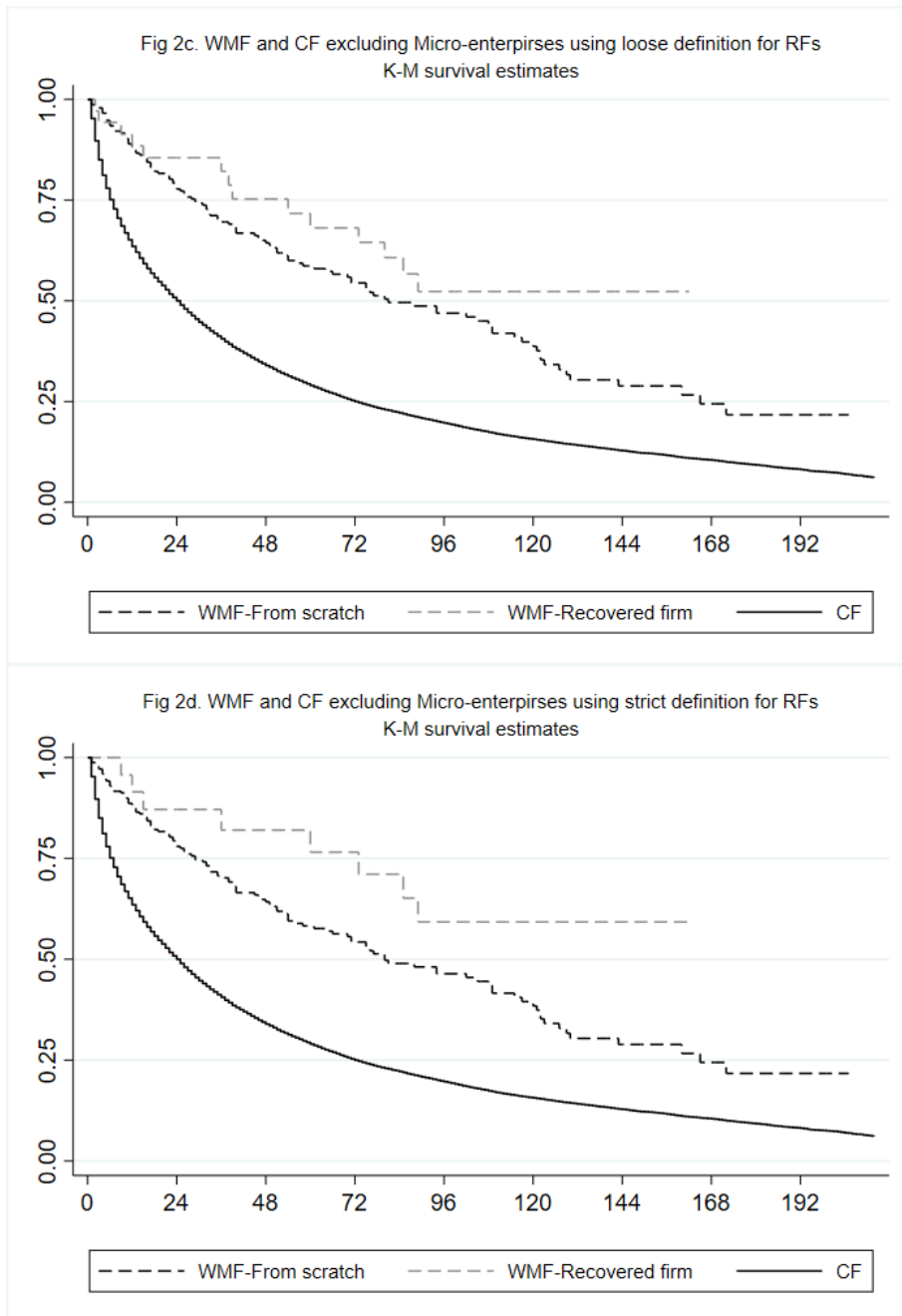
¹⁹ The comparative survival analysis of WMFs and CFs in Uruguay by Burdín (2014) arrives at a very similar result.

in the estimates. For Figure 2a, 100,247 CFs, 389 PCs created from scratch, and 50 RFs were used. In Graphs 2b, 2c, and 2d, the number of cases used were, respectively, 39,620 CFs, 329 CPs created from scratch, and 47 RFs; 39,620 CFs, 238 WMF-FSs, and 36 RFs; 39,620 CFs, 249 WMF-FSs, and 25 RFs.²⁰

Figure 2. Kaplan-Meier Survival Functions by group of firms



²⁰ Graphs of the Nelson-Aalen Hazard Functions are included in the Appendix. They show a higher risk of closure in the first years of life (*liability of newness*) for CFs and for the different groups of PC-FSs. However, this behavior is not observed for RFs.

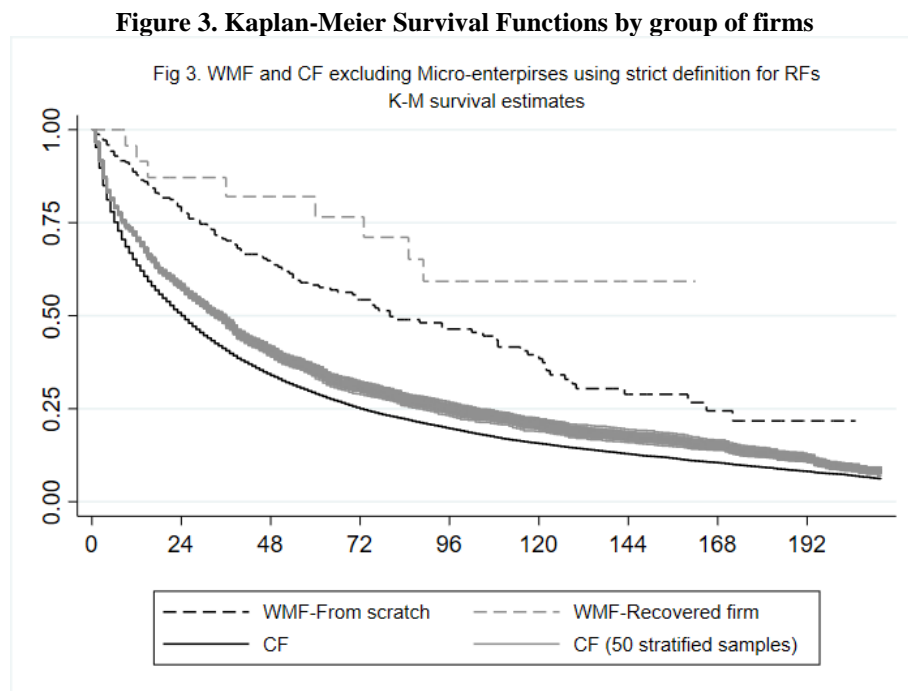


Notes: The Kaplan-Meier survival function is defined as $\hat{S}(t_j) = \prod_{j|t_j > t} (1 - d_j/n_j)$, where d_j is the number of failures at t_j , and n_j is the number at risk at t_j (before the occurrence of the failures).

One of the problems with the estimates presented is that the number of RFs is low and, once I use more restrictive criteria, the number of cases decreases even more. However, according to the log-rank test, I reject the null hypothesis of equality of the survival functions, even using the most restrictive criterion, which is the case shown in Figure 2d

($\chi_{(2)} = 94.47$). For example, ten years after the firms were created (120 months in Figure 2d), approximately 10% of CFs, 37% of WMF-FSs, and 60% of RFs survive.²¹

The different results observed among CFs, WMF-FSs and RFs could be due to the different composition of industries and cohorts by each group of firms. For example, if a greater proportion of CFs were created during the 2002 crisis, a higher number of business closures for CFs may be expected. To solve this problem, I would ideally estimate separated survival functions by industry and cohort. However, given the low number of RFs in the database, this is not possible. However, I can compare RFs and WMF-FSs with 50 samples of 2000 CFs that have the same industry and cohort composition as the WMFs created after 1996. As seen in Figure 3, the survival of these CF samples is slightly higher than the whole group of CFs, but still lower than the WMF-FSs and RFs.



Notes: Kaplan-Meier survival functions for 50 stratified samples of CFs, each one representing a sample of 2000 conventional firms that have the same industry and cohort composition as the new WMFs.

²¹ Pérotin (2004) also finds a greater survival of French RFs compared to other WMFs.

6. Earnings differentials

To analyze the earnings differences between RFs, WMF-FSs, and CFs, the following Mincer equation is estimated:

$$w_{it} = \alpha_0 + \alpha_1 C_{it} + \alpha_2 R_{it} + \alpha_3 E_{it} + \alpha_4 S_{it} + \alpha_5 A_{it} + \beta X_{it} + \gamma Y_t + \mu_i + u_{it} \quad (1)$$

where w_{it} is the logarithm of worker i 's earnings in month t . The coefficients of interest are α_1 and α_2 . C_{it} is a dummy variable that takes a value of 1 if worker i is employed in a WMF in t and 0 otherwise. R_{it} is a dummy variable that takes a value of 1 if worker i is employed in an RF in t and 0 otherwise; E_{it} represents worker i 's age in t ; S_{it} is a dummy variable that takes a value of 1 if worker i is a woman; A_{it} represents worker i 's job tenure in t ; X is a vector of firm control variables that includes industry (two-digit ISIC code) and size (number of employees); Y_t is a vector of monthly and yearly dummy variables that attempt to capture the effects of the macroeconomic cycle and seasonality; μ_i represents unobservable factors that affect a worker's earnings, which vary across workers but can be considered constant over time; and u_{it} represents unobservable factors that vary across workers and over time.

To identify earnings differentials by firm, I exploit the fact that workers switch jobs and that the data I use include all previous and subsequent periods of employment. The share of workers in the dataset who switch between WMFs and CFs is roughly 23.8% (31,908 workers switch 38,234 times from a CF to a WMF, and 34,915 times from a WMF to a CF). It is known that fixed effects estimates of a relatively persistent status—as happens when number of switchers is small—are more susceptible to attenuation bias due to possible measurement errors (Freeman 1984; Card 1996). However, in this research, measurement errors are of less concern because the estimates use administrative records that are unlikely to reflect either systematic miscoding or misreporting.

Table 3 shows the results for the estimates of Eq. (1). As can be seen in column 2, the estimated coefficient α_1 is positive and significant, and it shows that workers at WMFs earn 2% more than those employed at CFs.²² However, the estimated coefficient α_2

²² Burdín (2016) arrives at very similar results using similar data for Uruguay.

indicates that workers at RFs suffer an earnings penalty of 24% compared to workers at other WMFs (see column 2 of Table 3). Obviously, this result also indicates that such workers would have earnings substantively lower than those of their counterparts at CFs. The estimates of the coefficients of the other variables are the usual for Mincer equations (a positive but decreasing effect of age and tenure, a negative effect of being a woman, and a positive effect of firm size). Based on this initial analysis, it appears that the specifics of RFs may cause them to perform worse than other WMFs and worse than CFs. However, the specification of the estimate in Table 3, column 2 might not be fair to RFs. Recovered firms are all new (created after 1996), but they are being compared with older and more established firms. Additionally, workers at RFs, who had previous histories in failed conventional firms, are being compared with workers who don't have such a stain. I will consider these issues. But first, I will carry out some robustness checks for the results in column 2.

In order to evaluate the robustness of the results, I estimate Eq. (1) with some variants. Columns 3-10 of Table 3 show the results when, instead of considering the current ratio of employees to members, I exclude those PCs with a ratio higher than 20% in the firm's first year. Next, I estimate Eq. (1) excluding the salaried workers of WMFs, considering only the employees of CFs and the members of WMFs (column 4 of Table 3). Considering that the available data do not include information on education, columns 5-10 show the results for Eq. (1) using only workers older than 25. After 25, it is unusual to observe changes in levels of formal education. Additionally, I excluded micro-enterprises (with fewer than 6 workers). The reason for including this estimate arises from the fact that Uruguayan law forbids WMFs from having fewer than 6 members, eliminating the possibility of micro WMFs (column 6 of Table 3). In all cases, it can be observed that the earnings differential of RFs compared to other WMFs remains negative and in a range of 21-22%. Hence, I can say that when compared to the whole population of WMFs and a representative sample of all CFs, RFs perform worse than these firms, at least if the firm's performance is measured through its workers' earnings. But, as mentioned above, maybe this comparison is unfair.

Column 7 presents the results when Eq. (1) is estimated only for workers who were employed at CFs that later became RFs. This group includes both the workers who became part of the RF and those who chose to work at another conventional firm after the

previous CF closed. As can be seen, compared to those who remain working at another CF, RF workers experience a negative earnings differential close to 8.5%. Obviously, this result does not indicate that if all workers at the previous CF had joined the RF, they would all experience this earnings differential. Neither does it mean that if all RF workers had chosen to work at another CF, they would not have experienced a negative earnings differential at all. It is very likely that those who later joined a CF are probably those who had better prospects at this type of firm. In order to be able to make a counterfactual analysis of the earnings differentials of RF workers, another methodological design and different data would be needed. However, a better approximation to the problem can be made by estimating Eq. (1) for all workers who were employed at a closed CF (column 8). In this case, the results indicate that compared to other workers who worked at closed firms, the earnings differential observed in RFs is small (possibly null), since the coefficient is 6% but not significant. So, when considering only the specific population of workers who worked at a failed CF, RFs don't perform as badly. Maybe for an average worker who had a job at a failed CF, there is not a good outside option after the firm closes. It doesn't matter if those workers find a new job at a CF or join the RF, in any case they would experience similar earnings losses.

Another fact that should be considered is that the identification strategy only allows me to identify RFs created after 1996. Because of this, the observed earnings differential for RFs may be capturing a cohort effect. To solve this problem, I estimate Eq. (1) only for firms created after 1996 (column 9). As can be seen, in this case the negative earnings differential drops to 13%. Finally, I estimate Eq. (1) only for workers who were employed in failed CFs and consider only firms created after 1996 (column 10). This may be a fairer comparison for RFs. As shown, compared to other workers who got a job at a firm created after 1996 after having been employed at a failed firm, the earnings differential observed for RFs is very low or zero. Again, when considering only the specific population of workers who had a job at a failed CF and who work in firms created after 1996, RFs perform just as well as CFs. For these workers, there are probably not good options if they want to maintain the earnings they had in their previous job. It doesn't matter if they move to a CF or join the RF, they will experience similar earnings losses either way.

Table 3. Earnings Gap between workers at RFs, WMF-FSs and CFs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
WMF	-0.013 (0.009)	0.017 (0.009)*	0.014 (0.007)*	0.044 (0.011)***	0.000 (0.008)	-0.004 (0.009)			-0.042 (0.015)***	
RF	-0.032 (0.021)	-0.241 (0.020)***	-0.214 (0.018)***	-0.224 (0.022)***	-0.207 (0.020)***	-0.213 (0.020)***	-0.093 (0.028)***	-0.06 (0.047)	-0.090 (0.029)***	-0.019 (0.090)
Female	-0.259 (0.005)***									
Age	0.036 (0.001)***	0.004 (0.001)***	0.004 (0.001)***	0.004 (0.001)***	0.005 (0.002)**	0.005 (0.000)***	0.005 (0.002)**	0.004 (0.000)***	0.004 (0.001)***	0.004 (0.000)***
Age ²	-0.000 (0.000)***	-0.001 (0.000)***	-0.001 (0.000)***	-0.001 (0.000)***	-0.000 (0.000)***	-0.000 (0.000)***	-0.000 (0.000)***	-0.000 (0.000)***	-0.000 (0.000)***	-0.000 (0.000)***
Age * Female		-0.001 (0.002)	-0.001 (0.002)	0.001 (0.003)	0.003 (0.003)	0.007 (0.003)**	-0.013 (0.010)	0.001 (0.005)	-0.014 (0.006)**	-0.005 (0.009)
Age ² * Female		0.000 (0.000)***	0.000 (0.000)***	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)**	-0.000 (0.000)	0.000 (0.000)**	-0.000 (0.000)
Tenure	0.054 (0.001)***	0.025 (0.001)***	0.025 (0.001)***	0.029 (0.001)***	0.024 (0.001)***	0.024 (0.001)***	0.044 (0.002)***	0.022 (0.001)***	0.032 (0.002)***	0.018 (0.002)***
Tenure ²	-0.001 (0.000)***	-0.001 (0.000)***	-0.001 (0.000)***	-0.001 (0.000)***	-0.001 (0.000)***	-0.001 (0.000)***	-0.001 (0.000)***	-0.001 (0.000)***	-0.002 (0.000)***	-0.001 (0.000)***
Size (in logs)	0.132 (0.001)***	0.104 (0.001)***	0.104 (0.001)***	0.114 (0.002)***	0.106 (0.002)***	0.084 (0.002)***	0.102 (0.007)***	0.096 (0.002)***	0.110 (0.002)***	0.095 (0.004)***
Observations	6,798,858	6,798,858	6,918,023	5,054,998	6,090,288	5,400,548	593,757	2,136,146	1,977,881	886,436
R-squared	0.426	0.230	0.228	0.220	0.211	0.182	0.131	0.193	0.204	0.200
Number of workers	117,764	117,764	117,764	102,174	98,415	93,287	16,539	48,001	56,477	29,377

Notes: The dependent variable is the logarithm of monthly earnings. In column (1), the Pooled OLS estimates are shown; columns (2) - (10) show the results of the panel data fixed effects estimates. In columns (3) - (10), only WMFs are considered, PCs that have an initial employees / members ratio lower than 0.2. The estimates corresponding to column (4) exclude salaried workers for WMFs. In columns (5) - (10), those younger than 25 are excluded. In column (6), microenterprises are excluded. In column (7), only workers who were employed at a CF predecessor to an RF are considered. In column (8), only workers who were employed at a failed CF are considered. In column (9), only firms created after 1996 are considered. In column (10), only those who have a job at firms created after 1996 after having been employed in a failed CF are considered. In addition to the variables shown here, all estimates include industry and yearly dummies as control variables. Robust standard errors (reported in parentheses) allow intragroup serial correlation. *Significant at 10%; **significant at 5%; ***significant at 1%.

Additionally, in order to analyze the impact of some characteristics of RFs on their earnings differentials, I added 6 variables to Eq. (1): P_i is a variable that measures the time elapsed between the closing of the pre-existing CF and the entry of the RF, and B_i is the size (number of workers) of the previous CF. The latter indicator attempts to capture the impact that the scale of the pre-existing CF has on the earnings of the RF. K_i is the percentage of the workers at the previous CF that joined the RF at its startup; this indicator is intended to measure how much of the previous CF's scale the RF managed to preserve. Q_i is the percentage of previous CF workers in the last quintile of wages who joined the RF at its startup, used as a way of measuring how much of the high-skilled labor used in the previous CF is preserved by the RF. V_i is the average age of the RF founding members. The five variables just mentioned take a value of 0 when the firm is not an RF. Finally, the variables HF_i and HI_i are, respectively, workers tenure at the firm and in the industry of their previous job at the time they quit or lost their jobs. This variable is meant to capture the accumulation of specific human capital (SHC) that the workers had when the CF closed. To evaluate the differential impact of SHC accumulation on RF workers, this variable is interacted with a dummy variable that identifies RFs. For the estimates included in Table 4, the PCs that have an initial ratio of employees to members higher than 0.2 were excluded, as well as workers under 25 years old (the same set of data used for the estimates shown in column 5 of Table 3).

The results of the estimates of Eq. (1) with the addition of the variables described above can be seen in Table 4. In column 1, observed results indicate that the inactivity lapse negatively affects the earnings of RF workers. Each year of additional inactivity is associated with an extra income penalty of 4.8 % compared to other workers. This impact may be associated with several of the factors mentioned in Section 1: the defection of the most qualified workers or those with greater accumulation of general human capital and less SHC, the loss of customers, the interruption in links with banks, etc. However, this variable alone cannot explain the entire earnings penalty of RF workers. In the hypothesis with no inactivity lapse, the estimates also indicate that the workers will experience a penalty of 16% on their earnings.

Table 4. Factors affecting the earnings differentials of RFs workers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
WMF	0.001 (0.008)	0.001 (0.008)	0.002 (0.008)	0.001 (0.008)	0.001 (0.008)	-0.042 (0.015)***	-0.045 (0.014)***
RF	-0.159 (0.027)***	-0.383 (0.054)***	0.658 (0.146)***	0.604 (0.138)***	0.436 (0.144)***	-0.028 (0.033)	-0.045 (0.034)
Inactivity lapse	-0.004 (0.002)**	-0.003 (0.002)*	-0.001 (0.002)	0.002 (0.002)	0.003 (0.002)		
Failed CF final size		0.057 (0.010)***	0.054 (0.010)***	0.068 (0.009)***	0.086 (0.010)***		
Initial average age			-0.025 (0.003)***	-0.028 (0.003)***	-0.026 (0.003)***		
Share of former coworkers				0.344 (0.056)***			
Share of former coworkers of the 5th quintile					0.659 (0.082)***		
SHC						-0.003 (0.001)*	-0.011 (0.001)***
SHC*RF						-0.024 (0.007)***	-0.017 (0.002)***
Observations	6,090,288	6,090,288	6,090,288	6,090,288	6,090,288	1,977,572	1,977,547
R-squared	0.211	0.211	0.211	0.211	0.211	0.205	0.205
Number of workers	98,415	98,415	98,415	98,415	98,415	56,472	56,473

Notes: The dependent variable is the logarithm of monthly earnings. Columns (1)-(7) show the results of the panel data fixed effects estimates. Columns (6) and (7) exclude employment periods starting before April 1996. In addition to the variables shown here, all estimates included industry and yearly dummies as control variables. Robust standard errors (reported in parentheses) allow intragroup serial correlation. *Significant at 10%; **significant at 5%; ***significant at 1%.

The results shown in column 2 indicate that the scale inherited from the closed CF is an important factor in explaining the future performance of an RF. For every 100 additional workers that the previous CF had, the estimated earnings penalty is 5.7% lower (the variable is expressed in hundreds of workers). However, in order for RF workers to experience no earnings penalty at all, according to the results shown in column 2, the failed CF should have a size of at least 747 workers.²³ This size was not reached in any of the observed RFs in Uruguay (the highest observed value was 662 workers).

²³ In order to achieve this result, as well as those in the following paragraphs in this section, the other variables that characterize RFs are evaluated at the mean.

Column 3 of Table 4 includes the initial age of the RF founding members. According to the results, a reduction of 1 year in the average age of the founding members is associated with a decrease in the earnings penalty of 2.5%. As seen in Table 2, the average age of the founders of an RF is 42 years old, compared with 39 years old for other WMFs. Hence, if that difference were reduced to 0 years, the estimated average earnings penalty associated with the initial members' average age would be 25.5% instead of 33.0%.²⁴ Among the results presented in column 3, it can be seen that the coefficient associated with the firm's inactivity lapse is no longer significant. The same occurs for the estimates presented in columns 4 and 5. This result is reasonable if the impact of the RF inactivity lapse on earnings is associated with the defection of younger and more skilled workers. This effect is now partially captured by the age of the initial members and the percentage of CF workers who join the new firm.

Another variable that seems to have a great impact on the future performance of RFs is the percentage of workers from the previous CF who participate in the creation of the RF. As the results in column 4 show, for each additional 10% of previous coworkers who join the new firm, the expected earnings penalty is 3.4% lower. However, even in the best scenario, in which 100% of CF coworkers participate in the new RF, the earnings penalty is still 13%.

However, these results change when high-skilled workers are considered separately. According to the estimates that appear in column 5, the percentage of workers in the last quintile of wages who join an RF is critical to the performance of the firm. The results indicate that for every additional 10% of high-skilled former workers who join the new firm, the expected earnings penalty is 6.6% lower. In this case, it suffices to have 79% of the most skilled workers from the CF integrate into the new RF to get an earnings penalty of 0 compared to workers at CFs and other WMFs. If an RF gets that more than 79% of the former CF's most qualified workers to join the new firm, a positive earnings differential would be expected.

Finally, I consider the impact of industry or firm SHC accumulation on subsequent earnings. For this purpose, I use each worker's tenure at a firm or in the industry at the

²⁴ The effect of the initial age could be due to a cohort effect of the workers if they had, on average, different educational levels. However, an education variable is not available to rule out this possibility.

time their previous job ended as a proxy for SHC. In the case of RF workers, this previous tenure corresponds with their employment they had at the failed CF. This variable can only be estimated for those periods of employment that, having started after April 1996, allow me to observe the previous employment period for the same worker. This is why the number of observations used in these estimates falls to something just over half of the original. Column 6 shows that firm SHC accumulation in the previous job seems to be much less relevant in explaining the earnings of CF and WMF-FS workers. However, this is not the case for RF workers. For this last group, each additional year of firm tenure at the time the CF closed is associated with an earnings penalty of 2.7%. Moreover, when this variable is included, it captures the whole earnings differential effect of RFs. This result is striking, since one reason that workers may have to choose to create an RF is to be able to continue using their SHC. According to this result, for RF workers, it may be difficult to use their SHC (or at least to make full use of it). When industry SHC is considered (column 7), an earnings penalty of 1.1% for every year of tenure in the industry is also observed for other workers, although it is lower than the 2.8% observed for RF workers.

7. Final remarks

In this article, I analyze the comparative performance of RFs, WMF-FSs, and CFs. To this end, I use a linked employee-employer data-panel from the administrative records of Uruguayan social security. The results indicate that RFs survive longer than other WMFs and CFs. I arrive at the same result even when the different industry and cohort composition of each group of firms is considered. In spite of RF's longer survival, their workers receive a substantially lower income than workers in other WMFs or CFs (approximately 21% lower). However, when compared with a more similar group of workers—workers that were employed in firms created after 1996 after having been employed in failed CF—no relevant differences are found. In this case, the earnings differentials of RF workers compared to those working in conventional firms were close to zero.

How well or poorly RFs perform, in terms of the earnings differentials obtained by their workers, is mainly associated with their ability to preserve the scale and worker knowledge of their CF predecessors. The results obtained indicate that both the size of the CF that gave rise to the RF and the share of workers who participate in the new collective enterprise are important in explaining the subsequent earnings differentials of the workers, particularly when considering the most skilled workers. The ability of RFs to retain these workers and avoid a brain drain seems to be a critical issue that impacts the RFs' subsequent earnings.

The high average age of RF founding members also negatively impacts their subsequent earnings, as does their high average industry or firm tenure in their previous jobs. This last result could be an indication that the strategy of keeping a failed CF operating in the form of an RF, thus being able to continue using the high levels of accumulated specific human capital of its workers, does not have all the expected results. One question that arises from this result is whether workers are not able to fully use their SHC, or if they are in fact using it and thanks to that they are avoiding even worse potential earnings losses. The first option would be the case if the firm experiences such changes during the conversion process that the failed CF and the new RF can no longer be said to be the same firm. In this case, the SHC was in fact specific to the failed CF, but no longer useful in the new RF. This could happen, for instance, if the worker had a broad knowledge of the firm's customers, but the RF lost these customers during a long conversion process.

Apparently, all workers of failed CFs experience a sharp fall in their earnings, regardless of whether they get a new job at another CF or they join an RF. Considering the earnings the workers receive, RF performance is not worse than that observed for similar workers in other WMFs or in CFs. Moreover, considering that employment is more stable at WMFs (Burdín & Dean 2009), and that RFs show a longer survival period, taking over a failing CF is not a bad option for its workers in light of their already dark prospects.

From the point of view of the policy implications of these results, RFs may not be the answer if policy makers want workers to keep their jobs and earnings levels. But RFs are not doomed to fail and, if project evaluation is properly done, supporting them is not a bad option if the goal is for workers with already bad prospects to keep a stable job. This doesn't mean that there aren't potentially better instruments of public policy to address

this type of situation. But if policy makers do decide to support the conversion of a failed CF, it is critical to avoid a long inactivity lapse.

The results of this study offer new information on the comparative performance of RFs, WMF-FSs, and CFs, as well as on the different determinants of their performance. However, several questions remain open, particularly regarding the decision process of RF workers when they choose to take over a CF. In other words, is it convenient for them to create such a firm and keeping it running, when compared to other alternatives available; in particular, what are these other alternatives or outside options? To answer these questions, more research is required with better data sources and other methodological designs.

8. References

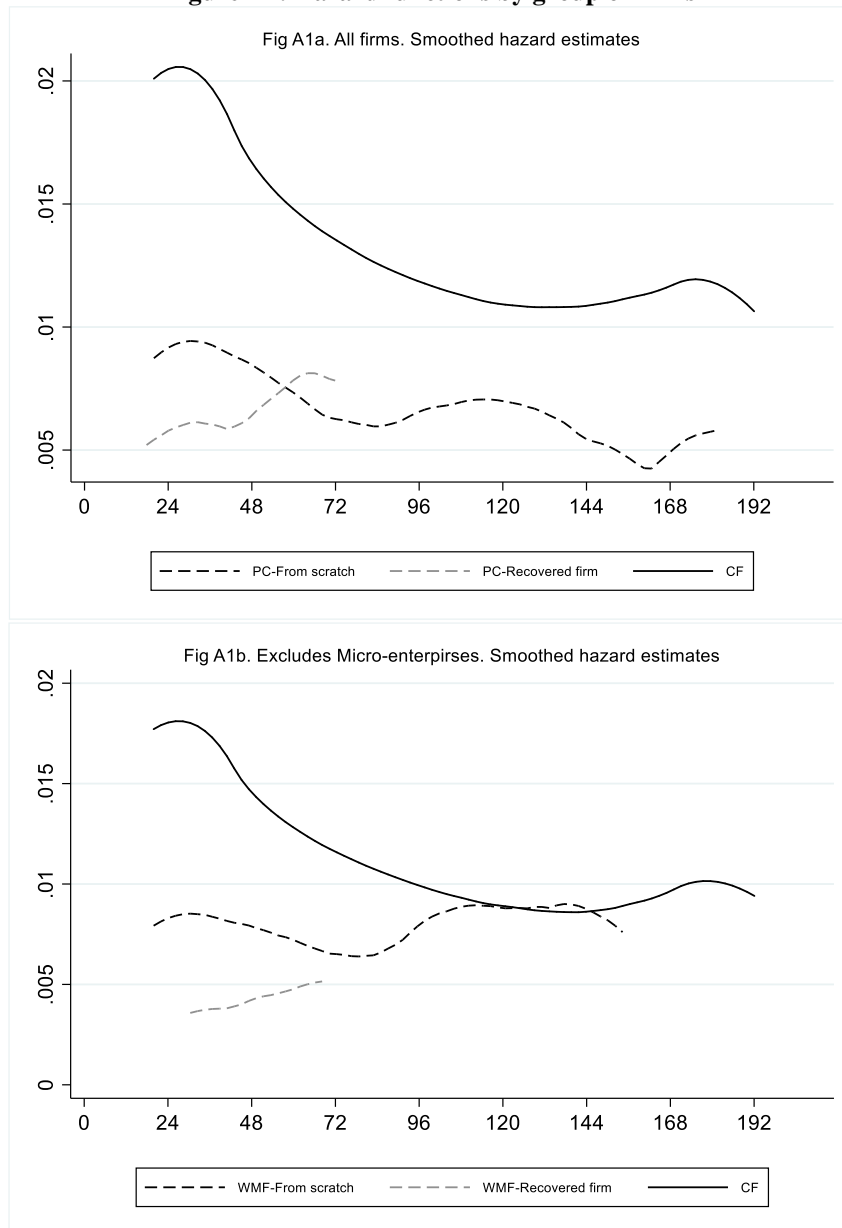
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9. Appendix

Figure A1. Hazard functions by group of firms



Notes: The hazard function is calculated as a weighted kernel density using the estimated hazard contributions: $\Delta\hat{H}(t_j) = \hat{H}(t_j) - \hat{H}(t_{j-1})$, where t_j is the current failure time and $\hat{H}(t_j)$ is the estimated cumulative hazard. The Nelson-Alen estimator of $\hat{H}(t_j)$ is defined as $\hat{H}(t_j) = \sum_{j|t_j \leq t} (d_j/n_j)$; this is the sum of expected failures at each observed time. Figure A1a shows the hazard functions for all CFs and PCs. These estimates use an undemanding criterion for RFs, since all PCs are classified in this way if at least 10% of the founding members belonged to the converted CF. In Figure A1b, all micro-enterprises are excluded, as well as all PCs with an initial employee / member ratio higher than 20% (only considering CFs and WMFs). In the case of RFs, all WMFs where less than 50% of the founding members belonged to the converted CF are excluded.

Effort Provision in Cooperatives: Evidence from Worker Absences

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Abstract

Despite an extensive literature on how the allocation of control rights may affect production decisions, direct evidence on how individuals' effort provision varies across different organizational settings remains scant. In this paper, we investigate the sickness absence behaviour of individuals employed in worker cooperatives, that is, in firms owned and ultimately controlled by their workforce. Our identification approach rests on an exogenous increase in the generosity of paid sick leave faced by a subset of workers resulting from a recent reform in the Uruguayan statutory sickness insurance system. Using monthly employment history administrative records matched with individual-level information on certified sick leave, we estimate a difference-in-differences model in which the treatment effect varies between individuals employed in cooperatives and conventional firms. We show that both the incidence and duration of sickness-related absences differentially increase for individuals affected by the reform and employed in worker cooperatives relative to the other groups. The differential response is mainly driven by members' behavior, short-term absences, and hard-to-diagnose (and, hence, more prone to moral hazard reporting problems) musculoskeletal conditions. We find no evidence that cooperatives experienced a differential increase in extended weekend absences ("Monday effect") after the reform. Finally, we find suggestive evidence that conventional firms rely on more punitive labor discipline enforcement strategies, using dismissals more actively than cooperatives as a tool to keep absenteeism in check after the reform.

JEL Classification: I18, J22, J54

Keywords: paid sick leave, absenteeism, cooperatives, difference-in-differences.

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1 Introduction

The effects of firm ownership and organization on the behaviour of workers is a topic of perennial interest to economists and organizational scholars. However, direct evidence concerning individuals' effort responses under different property rights arrangements remains rare.

Absenteeism is an important form of employee withdrawal behaviour that can be costly and disruptive for firms and organizations. Firms may suffer from productivity losses and incur extra costs from employing temporary workers or from paying regular workers overtime in order to cover for absent employees.¹ There is an extensive literature analysing the institutional determinants of absenteeism, particularly the effect of social insurance via statutory sick leave.² However, there is little evidence about how the organization of firms moderates the effect of paid sick leave on absence behaviour.

This paper fills this gap by assessing differences in absence behaviour across individuals employed under two sharply distinct contractual arrangements: worker cooperatives and conventional investor-controlled firms. More precisely, we study the labour supply effects of a paid sick leave reform that increased the effective replacement rate of sickness insurance for certain workers in Uruguay. We focus on the differential response to the reform in terms of absence behaviour for workers employed in worker cooperatives and in conventional private-sector firms. Worker cooperatives are defined as enterprises in which the workforce has ultimate control rights (Dow 2003). Their members usually own and manage the company on a 'one person, one vote' basis, regardless of their capital contribution. These organizational features stand in sharp contrast to those exhibited by conventional firms, in which capital owners hire labour, appoint managers and have the right to appropriate the residual income.

From a theoretical point of view, the effect of cooperative property rights on absence behaviour is ambiguous. On the one hand, cooperatives may suffer from weak work incentives resulting from the well-known free rider problem associated with team production (Alchian and Demsetz 1972). This may be exacerbated by the *de facto* job security enjoyed by cooperative members, limiting the scope for using the threat of dismissal as a mechanism to keep shirking behaviour in check. Indeed, worker cooperatives are char-

¹M. A. Herrmann and Rockoff 2012 document productivity losses from teachers' absenteeism. According to Hensvik and Rosenqvist (2019), production disruptions depend on firms' ability to find internal substitutes for absent workers.

²Many countries have in place a system of statutory paid sick leave, insuring workers against income losses due to sickness absences. Much scholarly attention has been devoted to studying individual behavioural responses to changes in the degree of generosity of public paid sick leave, mainly in the context of developed countries. On the one hand, more generous systems are associated with a greater incidence and duration of sickness absence due to moral hazard problems (Henrekson and Persson 2004, Paola, Scoppa, and Pupo 2014, Ziebarth and Karlsson 2010, Ziebarth and Karlsson 2014, Ziebarth 2013, Bryson and Dale-Olsen 2017). On the other hand, paid sick leave generosity seems to reduce "contagious presenteeism," i.e., it prevents employees with contagious illnesses from going to work and spreading the disease to co-workers and customers (Pichler and Ziebarth 2017).

acterized by a dual-governance structure. On the one hand, worker-principals appoint managers, set objectives, and monitor the implementation of firm policies. On the other hand, managers act as quasi-principals organizing and monitoring the production process and the actions of the workers. However, although workers have the power to dismiss managers, managers cannot replace workers without consulting members (Ben-Ner et al., 1993). Overall, managerial discretion to impose sanctions and dissolve labour contracts is more limited in cooperatives than in conventional firms (Hart and Moore, 1998).³ These factors may relate to a greater incidence of sickness absence in this type of organization. On the other hand, the fact that cooperatives rely more extensively on group-based profit sharing and on team-based work may mitigate absence behaviour driven by moral hazard. Profit-sharing makes workers residual claimants on the income stream associated with the noncontractible effort provided to the firm. This may provide an incentive to reduce absences, particularly in small cooperatives. Indeed, the role of peer pressure and social emotions in solving the team production problem has been extensively analysed (Kandel and Lazear 1992; Hamilton, Nickerson, and Owan 2003; Putterman 2006; Carpenter, Bowles, et al. 2009).⁴ As the entire cooperative team suffers when one worker is absent from work, the returning team member can be exposed to informal group sanctions. This may help to curb absence behaviour in cooperatives.⁵ Therefore, the extent to which cooperative membership affects workplace absences and labour supply responses to changes in sick leave insurance remains an open empirical question.

Our analysis is based on monthly employment history data from Uruguayan social security administrative records matched with unique individual-level information on certified sick leave by disease category over the period 2005-2013. Identification rests on a specific feature of the Uruguayan sick leave reform implemented in January 2011. The reform increased the benefit cap, providing exogenous variation in the generosity of sick leave compensation across individuals depending on their pre-reform wage. This setting allows us to use a difference-in-differences approach, including heterogeneous treatment

³Workers' experience in cooperatives may be more intense and stressful than in a conventional business as members have both production and decision-making responsibilities. There is some evidence showing that cooperative members exhibit lower job satisfaction than workers employed in conventional jobs. This suggests that cooperatives, far from being idyllic workplaces, may be better described as "high-expectation, high-stress work systems" (Arando et al. 2015).

⁴Although profit sharing provides weak incentives to work harder in large organizations, it might suffice to induce reciprocal workers to report each other for shirking (Carpenter, Robbett, and Akbar 2018). There is also extensive theoretical and empirical research showing that cooperative behaviour in public good games can be sustained by relying on horizontal monitoring and social punishment (Fehr and Gächter 2000). Peer sanctions also may be targeted to high-contributors (high-effort workers). While teams in cooperatives may overcome free-riding problems, they also may suffer from this type of antisocial punishment if there is a prevalent low-effort social norm (B. Herrmann, Thöni, and Gächter 2008; Ertan et al, 2009).

⁵The cost to the organization when a worker shirks by being absent and taking excessive paid sick leave may be less salient in the Uruguayan context as the country has no experience rating sick leave insurance (i.e the payroll tax rate does not rise when more of the firm's workforce receives paid sick leave).

effects in order to capture the differential response of cooperative members.

The analysis yields two basic results. First, we find that the increase in sick leave pay increased the probability of being absent from work in a given year by 2 percentage points more among treated individuals employed in cooperatives than among treated individuals employed in conventional firms. Second, the duration of absence for treated cooperative members increased by 2 days relative to the other groups. In relation to the pre-reform situation of treated individuals employed in worker cooperatives, sickness absences in the extensive and intensive margins increased by 14% and 26%, respectively. Placebo tests suggest that the pre-reform absence behaviour was similar in control and treatment groups. By exploiting the panel structure of the data and excluding workers who changed jobs or switched between organizational forms during the period, we also rule out confounding effects associated with compositional changes in the treatment and control groups over time and non-random sorting into cooperatives.

We explore several potential mechanisms that may account for the observed differences: (1) the differential sickness absence behaviour of treated individuals in cooperatives is explained by short-term rather than by long-term absences; (2) the intensive margin response (duration) is entirely driven by cooperative members (no significant effects are obtained when the analysis is restricted to employees in conventional firms and cooperatives); (3) the analysis of disease-specific behavioural responses reveals a differential increase in short-term absences related to hard-to-diagnose musculoskeletal conditions for treated individuals employed in cooperatives. Interestingly, the medical conditions included in this category (e.g. back pain) are usually considered more prone to moral hazard reporting problems. Overall, the evidence suggests that conventional labor supply responses explain at least part of the rise in absenteeism among individuals employed in cooperatives after the reform. Finally, we show that conventional firms use dismissals more actively than cooperatives as a tool to keep absenteeism in check after the reform.

The paper contributes to different strands of literature. First, this paper adds to the literature on sick leave insurance and absence behaviour (Henrekson and Persson 2004; Paola, Scoppa, and Pupo 2014; Ziebarth and Karlsson 2010; Ziebarth and Karlsson 2014; Ziebarth 2013; Bryson and Dale-Olsen 2017). While previous studies have focused exclusively on the U.S. and European countries, little is known about the incentive effects of paid sick leave reforms in less-developed countries. Second, we contribute to the understanding of the interplay between sick leave insurance and workplace absenteeism in different organizational settings. As pointed out by Gibbons and Roberts 2015, the study of cooperatives and other alternative organisational forms has been largely overlooked in organizational economics. Previous studies have analysed the effect of probationary periods (Ichino and Riphahn 2005) and sick leave reforms in the public sector (Paola, Scoppa, and Pupo 2014). According to these studies, workers' behaviour is sensitive to the level of employment protection, sick leave compensation and monitoring intensity. By

sorting into a cooperative employment contracts, members “buy” an implicit long-term employment guarantee, which may have an effect on their absence behaviour.⁶ While the literature on the productivity effect of worker cooperatives vis-à-vis conventional firms offers mixed conclusions⁷, direct evidence regarding individual members’ effort in the form of absenteeism in this peculiar organizational setting remains extremely rare.

In addition, the paper contributes to the literature on the effect of employee participation on sickness absences. Previous work has studied both employee financial participation and participation in decision-making, reaching conflicting results. On the one hand, team production and profit-sharing seem to be negatively correlated with the incidence of sickness absence (Heywood and Jirjahn 2004, Dale-Olsen 2014). Instead, employee voice mechanisms, such as works councils, appear to be positively associated with absence (Arnold, Brändle, and Goerke 2018). Hence, the analysis of absence behaviour in worker cooperatives provides a unique opportunity to understand the joint effect of profit sharing and workers’ control on absence behaviour.⁸ Goerke and Pannenberg 2015, using an approach to identification closely related to the one adopted in this paper, studied the effect of a reduction of statutory paid sick leave using self-reported survey data from Germany. They find a positive relationship between trade union membership and sickness absence and a more pronounced reaction to the reduction in paid sick leave among union members than among non-members. Their treatment group, which is similar to the groups studied in other papers exploiting policy changes in the German paid sick leave that have generally applied across the board to all private workers, is entirely composed of private-sector workers and the control group comprises public-sector workers and self-employed workers. In this paper, we restrict the analysis to private sector workers employed both in worker cooperatives and in conventional enterprises. By relying on high-frequency administrative data, including information on the exact start and end date of each sickness spell and the associated doctor-certified disease categories, we are able to extensively investigate the underlying channels through which the differential response of cooperative members manifests itself.

The remainder of the paper is organized as follows. The next section describes the Uruguayan sick leave reform and provides contextual information on worker cooperatives. Section 3 explains the data and the identification strategy. Section 4 presents the main findings, provides evidence concerning identification assumptions and reports results from

⁶Interestingly, there is evidence that employment is more stable over the business cycle in worker cooperatives than in conventional firms (Burdín and Dean 2009; Pencavel 2013).

⁷Craig and Pencavel (1995) and Fakhfakh, Pérotin, and Gago 2012 report positive productivity effects studying worker cooperatives in the U.S. and French context, respectively. Using data from Portugal, Monteiro and Straume 2018 do not find evidence that cooperatives are more productive than conventional firms in any industry. Montero 2021 develops a novel approach to identification in this literature by exploiting features of the land reform implemented in El Salvador in 1980. Using a regression discontinuity design, he finds that cooperatives are less productive than conventional haciendas when producing cash crops but more productive when producing staple crops.

⁸Blasi et al. 2010 find a positive association between employee ownership and absences.

several robustness checks. Section 5 uncovers different mechanisms that may account for the differential behavioural response of individuals employed in worker cooperatives. Section 6 concludes.

2 Institutional context

2.1 Background on the Uruguayan paid sick leave reform

According to the sick leave legislation in Uruguay, a worker experiencing a sickness episode receives an amount b , which represents a constant replacement ratio (70%) of her last wage (w) up to a maximum benefit amount (b_{max}), where the replacement rate decreases.⁹ The benefit cap is defined in terms of Bases de Prestación y Contribución (BPC), where BPC is the basic unit of measurement used to calculate different social benefits in the Uruguayan social security system.¹⁰ Therefore, the sick leave pay is computed according to the following rule:

$$b = \begin{cases} 0.7w & \\ b_{max} & \text{if } 0.7w > b_{max} \end{cases} \quad (1)$$

To be eligible, the worker must have worked and paid social security contributions for at least 3 months in the year preceding the illness episode. As is common in other public sick leave regimes, a physician has to certify the worker's health condition. The worker is not entitled to any payment during the first three days of sick leave and can receive the benefit for a maximum of one year; the benefit may be extended for an additional year under special circumstances.¹¹ The sick leave pay is not disbursed by the employer but by the public health insurance system. The program is funded from general taxation and social security contributions are paid by both employers and employees. In contrast to experience rating insurance systems, employers' payroll tax rates do not depend on the number of workers firms have had on sick leave in the past.

Before the reform, the benefit cap was 3 BPC. Therefore, those workers for whom $0.7w$ exceeded the threshold of 3 BPC received exactly 3 BPC as paid sick leave. Figure 1 describes the evolution of the paid sick leave schedule over the period analysed in this paper. As a result of the reform, the benefit cap gradually increased by 1 BPC per year

⁹The fact that the sick leave benefit is a kinked function of previous earnings makes the design of the Uruguayan system comparable to social insurance programs in developed countries, such as the Norwegian public sick leave (Bryson and Dale-Olsen, 2019) and unemployment insurance in U.S. states (Landais 2015).

¹⁰1 BPC is equivalent to 3848 Uruguayan Pesos or 117 US Dollars (January 2018). Source: Banco de Prevision Social.

¹¹Altogether, the three day deductible, the 70% replacement ratio and the benefit cap, made the average Uruguayan worker to experience an income loss of about 51% in 2015 (after the reform) for every spell of paid sickness leave (Amarante and Dean 2017).

starting from January 2011. By January 2013, the last year included in our study, the benefit cap had reached 6 BPC.¹² Figure 2 plots the evolution of the ratio between the benefit cap and the average wage before and after January 2011, confirming the sharp relative increase of the benefit cap. The spikes observed in the data correspond exactly to the reform schedule (January 2011, 2012 and 2013).

2.1.1 Worker cooperatives in Uruguay

Worker cooperatives are defined as enterprises where members jointly carry out the production of goods or services activities and have control over important economic decisions. Usually, members jointly own and manage the firm on a “one person, one vote” basis regardless of their capital contribution and the residual is distributed among them according to a certain sharing rule.

In Uruguay, worker cooperatives are those firms that are legally registered as producer cooperatives (PCs) in which the employee-to-member ratio does not exceed 20%. These firms are allowed to hire temporary employees in response to seasonal demand changes but they must still comply with the legislated maximum percentage of hired workers in order to receive certain tax advantages – in particular, the exemption from paying the employer payroll tax to social security. The law also requires a minimum of six members to register a new cooperative firm. Although their key organisational features are predetermined by law, worker cooperatives have discretion over a broad range of associational rules. With respect to governance structure, WMFs must have a general workers’ assembly that selects a council to supervise the daily operations (the council, in turn, usually selects the managers). Each member has only one vote, regardless of his capital contribution to the firm. Physical assets of WMFs can be owned by their members either collectively or individually. Under collective ownership, members do not own tradable shares but enjoy the right to usufruct as long as they work in the firm. Under individual ownership, members own capital shares that vary with the firm’s value. Most Uruguayan WMFs operate under a collective ownership regime. As in other countries, membership markets are extremely rare in Uruguay: fewer than 10% of Uruguayan WMFs are owned by their workforce through individual shares (Alves, Burdin, et al. 2012).

3 Data and identification

3.1 Data

Our empirical analysis is based on longitudinal individual-level administrative records from the Uruguayan social security system. The data were provided by Banco de Pre-

¹²The reform was fully phased in by January 2015 when the benefit cap reached its current level of 8 BPC.

vision Social, the agency in charge of social security affairs in Uruguay. Employers are obliged to deliver monthly information on their employees to the agency, which uses that information to calculate pension and social benefits. To conduct this study, we combine three different databases. First, we use monthly employment history data from a random sample of 300,000 workers who were registered in the social security system for at least one month during the period 2005-2013. The structure of the data is an unbalanced panel of workers, containing information on wages, personal attributes of the worker (gender, age, tenure), and the firm in which she works (firm size, industry, region). Each worker-month observation is associated with a firm identification number so that job changes (or any other discontinuity in the individual's employment history) can be tracked. Moreover, we obtain similar employment history data for the universe of individuals employed in worker cooperatives. Finally, and crucially for the purpose of this study, we match individual-level records of certified sickness absences, including the start and end date of each sickness absence episode, and sick leave payment. Information on short sickness spells (fewer than 4 days) and diagnosis classified according to the International Classification of Diseases (ICD) is only available since 2010. For this reason, our investigation mainly focuses on spells of more than 3 days. We restrict the sample in several ways. First, we focus on workers employed in non-agricultural private firms, excluding public, rural and construction workers. Second, we only consider eligible individuals, i.e. those who made social security contributions for at least 3 months (or 75 days in the case of day laborers) in the year preceding the sickness spell.

The final dataset is an unbalanced panel from January 2008 to December 2013, i.e. three years before and after the sick leave reform. Descriptive statistics for the final sample are presented in Table 1. The resulting sample includes, on average, about 39,472 individuals in each month. The total number of individual-month observations is 2,435,782, corresponding to 61,180 and 3,455 individuals employed in conventional firms and worker cooperatives, respectively. The composition of the two groups is different: individuals employed by worker cooperatives are older than those employed by conventional firms and, in the latter case, the percentage of small firms is higher. Proportionately fewer women are employed by worker cooperatives than by conventional firms, particularly in the treatment group. On average, both the incidence and duration of sickness absences appear to be higher in cooperatives.

3.2 Identification strategy

Before the reform, sick leave pay was subject to a benefit cap equivalent to 3BPC. In other words, an individual for whom 70% of her total monthly earnings exceeded 3BPC received exactly 3BPC. As explained in section 2, the Uruguayan sick leave reform gradually increased this maximum benefit cap starting in January 2011. Our identification strategy

exploits the exogenous increase in the generosity of paid sick leave for this group of workers. We compare the evolution of sickness absence (incidence and duration) between affected and unaffected workers according to their pre-reform earning level. Individuals earning up to 3BPCs remained unaffected by the reform and compose our control group. Instead, the treatment group comprises individuals earning an amount such that their sick leave pay would have been capped before the reform ($3\text{BPC} < 0.7w < 6\text{BPC}$). For these individuals, the reform increased the effective replacement rate of sick leave pay. To define treatment and control groups, we consider workers' total monthly earnings in November 2010, immediately before the reform came into force (January 2011).

We estimate the following difference-in-differences specification:

$$y_{it} = \alpha + \beta T_t + \gamma D_i + \delta \text{Coop}_{it} + \theta D_i \times T_t + \phi D_i \times T_t \times \text{Coop}_{it} + \psi X_{it} + \rho_t + \tau_s + \omega_r + \epsilon_{it} \quad (2)$$

where y_{it} either measures the number of days of sickness absence individual i took in the last 12 months at time t or is an indicator for whether individual i experienced a sickness absence spell (lasting at least four days) in the last 12 months, T_t is a post-reform dummy, D_i is the treatment group dummy, and Coop_{it} is a dummy variable describing the cooperative status of individual i in month t . Year fixed effects ρ_t control for common macroeconomic trends, sector τ_s and region ω_r fixed effects account for time-invariant permanent differences across 9 industries and 19 regions respectively. We also control for personal and firm-level characteristics (gender, age, tenure, firm size, firm average wage). Coefficient θ captures the general effect of the reform and coefficient ϕ measures the differential effect for individuals employed in cooperatives. We estimate equation (2) by OLS, clustering standard errors at the individual level in order to account for serial correlation.

Figure 3 plots the evolution of the average sick leave benefit (in real terms) for both treatment and control individuals over time. The average sick leave pay increases in both groups. As sick leave pay is computed as a fixed fraction of the worker's total wage, this simply reflects the general increasing trend experienced by real wages in Uruguay during this period. More importantly, there is a differential increase in average sick leave pay for treatment workers at the expected dates (January 2011, 2012 and, 2013), suggesting that the reform hit the treatment group in the expected way. In Figure 4, we plot the number of workers in the treatment and control group affected by the cap before and after January 2011. As expected, the number of workers for whom the cap is binding decreases sharply after the reform in the treatment group.

Finally, in Figures 5 and 6, we plot the evolution of the incidence and duration of sickness absences for treated and control cooperative and conventional workers. Both figures show the evolution is similar in the pre-reform years for the four groups. While

these figures provide preliminary visual evidence supporting the common time trend assumption, we perform placebo DD regressions in section 4.3. Both figures clearly reveal that treated workers employed in worker cooperatives react very differently to the sick leave reform starting in January 2011.

4 Results

4.1 Exploratory analysis: fixed effects regressions

Before presenting the results of our main empirical exercise, we investigate the comparative absence behaviour of workers employed in worker cooperatives vis-à-vis employees in conventional firms by estimating a series of fixed-effects regressions. In this case, identification comes from the variability provided by workers who switch between organizational types during the period, under the assumption that sorting is driven by time-invariant characteristics. We count 1,746 switchers, which represents approximately 3% of the sample (454 workers moved from worker cooperatives to conventional firms and 1,292 made the reverse switch).

Table 2 reports the corresponding estimates from fixed-effects regressions. We successively add controls for personal firm-level characteristics (age, tenure, log of average firm wage, and firm size), year, industry, and region fixed effects. In columns (3) and (6), we report results from our preferred specifications, including region and industry-specific time trends.¹³ These estimates indicate the incidence of sickness absences is greater for workers employed in cooperatives compared with those employed in conventional firms, although the difference is not consistently significant across all specifications. Moreover, workers employed in cooperatives spend 2.7 more days per year on sick leave compared to those employed in conventional firms. This difference is statistically significant at conventional levels.

4.2 Difference-in-differences estimates

Table 3 shows our main difference-in-differences estimates. We exploit the fact that workers employed in worker cooperatives and conventional firms were exposed to an exogenous variation in the generosity of paid sick leave driven by the reform. Columns 1-3 show the estimated coefficients for the incidence of sickness absences (extensive margin). In column (1) we include controls for individual- and firm-level attributes (sex, age, tenure, log of average firm wage, and firm size) and region and industry fixed effects. In column (2), we add industry- and region-specific time trends to control for time-varying shocks. In column (3), we restrict the sample to full-time workers aged 25-55.

¹³In all specifications, we cluster standard errors at the individual level.

The coefficient associated with the triple interaction term, which measures the differential effect of the reform for treated workers employed in worker cooperatives, is significantly positive in all specifications. Our preferred estimates reported in Column (3) indicate that treated workers in cooperatives increased their probability of being absent from work by 4.8 percentage points in comparison to treated workers employed in conventional firms. This effect implies a 28% increase relative to the average pre-reform incidence of sickness absence among treated cooperative workers. Columns 4-6 report estimates considering the duration (in days) of sickness-related absences as the dependent variable (intensive margin). According to our preferred estimates reported in Column (6), which include industry- and region-specific time trends and restrict the sample to full-time workers, treated workers in cooperatives differentially increased annual absences by 5 days. The magnitude of the effect is sizeable, implying a 54% increase relative to the average pre-reform duration of sickness absence spells in that group.

4.3 Robustness checks and additional results

Event-study analysis. Our results indicate a differential intensification of absence behaviour among treated workers employed in worker cooperatives after January 2011. If the effect is due to the paid sick leave reform, we should not observe any differential pattern before 2011. Figure 7 and 8 report the results from an event-study analysis, showing the evolution of sickness-related absences over the years around the paid sick leave reform. Each estimated coefficient corresponds to the interaction between $T_t \times Coop_{it}$ and a full set of year dummies, where the coefficient for 2010 is normalized to zero. We do not find evidence of differential trends in workplace absences before 2011. The differential increase in sickness-related absences for treated workers employed in worker cooperatives becomes significant in 2012 and 2013.

Job changes and switchers. An important concern is that the reform may induce sorting of workers into cooperatives according to unobserved factors that may also affect their likelihood of sickness absence. We address this concern by restricting the analysis to a subsample of individuals who changed neither employer nor organizational status during this period. Our DID estimates excluding job switchers are reported in Table 4. In columns 1-2, we only exclude individuals who switched between the conventional and cooperative sector. In columns 3-4, we exclude all job switchers. Results are qualitatively similar to those reported in Table 3. Treated workers in cooperatives increased their likelihood of being absent from work by 1.2-1.4 percentage points in comparison to other groups. Duration increased by 2.7-3.2 days relative to the other groups. The effect is only significant at the 10% when we exclude all cases of job switchers. This suggests that self-selection into worker cooperatives resulting from the paid sick leave reform is not the

driver of our results.¹⁴

Organization-specific time trends. Our results might be explained by time-varying shocks affecting workers employed in cooperatives and conventional firms differently. To mitigate this concern, we estimate equation (1) including the full set of second-level interaction terms $D_i \times Coop_{it}$ and $T_t \times Coop_{it}$. The estimated coefficients are reported in columns (1)-(2) of Table 5. Results are qualitatively similar to our baseline estimates.

Compositional changes. We perform additional DID estimates using the balanced panel in order to control for workforce compositional changes. Estimates reported in Columns (3)-(4) of Table 5 restrict the period of analysis to 24 months before and after the reform. While there is no significant differential response for treated workers in cooperatives along the extensive margin, they do react differently in terms of the duration of sickness-related absence spells, increasing annual absences by 3.9 days relative to the other groups.

Individual fixed effects. We control for time-invariant unobserved heterogeneity by estimating a difference-in-differences model with individual fixed effects (FE-DID model). Results reported in columns (5)-(6) of Table 5 still indicate that the incidence and duration of sickness absence increased differentially among treated workers employed in cooperatives in relation to the other groups, though the intensive margin response (duration) is only significantly different at $p < 0.1$ ($p\text{-value} = 0.057$). The size of the effects is similar to our original estimates.¹⁵

Treatment intensity. The increase in the generosity of paid sick leave after January 2011 did not affect workers in the treatment group uniformly. Following Ziebarth 2013, we take into account differences in treatment intensity by computing for each individual the (potential) reform-induced increase in statutory sick leave pay over the entire post-reform period relative to her pre-reform gross wage. Our treatment intensity indicator takes the value zero for workers in the control group and positive values up to 32% of workers' gross wage for those in the treatment group. On average, the potential sick leave benefit for treated workers increased by 17% of their gross wage due to the reform. Results are presented in columns (7)-(8) of Table 5. Consistent with our previous results using a discrete treatment indicator, the higher the worker's reform-induced increase in sick leave pay, the higher the increase in both the incidence and duration of sickness absence over the post-reform period. More importantly, the behavioural response of workers employed in cooperatives is significantly stronger than in the other groups.

Firm characteristics effect. Our results on different behavioral response of workers cooperatives could be driven by the different response of individuals according to some

¹⁴Of course, we cannot rule out sorting effects in general. However, the fact that we observe a similar pre-reform trend in absence behaviour suggests that sorting pre-reform is unlikely.

¹⁵It is worth noting that in this case the effect is identified from within-individual change in their $D \times T$ and $D \times T \times Coop$ status over time, i.e. individuals with a relatively stable and long employment history.

firms characteristics, like size, employees age and wages. Perhaps, if individuals in bigger firms are more responsive to the generosity in the sickness leave pay and worker cooperatives have a higher average size, we could attribute to worker coops a behavior that in fact belong to bigger firms. Including some firms characteristics as controls doesn't allow us to dismiss this possibility. To rule out the confounding effects of firms characteristics, we add a set of firm variables (size, workers age and workers wage) that interact with our treatment and worker cooperative dummies. Results reported in Table A.1.1 indicate a higher increase for incidence [columns (1)-(4)] and duration [columns (5)-(8)] of sickness absence for individuals in cooperatives. Even more, according to results reported in column (4) the coefficient of the interaction $D_i \times T_t \times Size_{jt} \times Age_{jt} \times Wage_{jt} \times Coop_{it}$ is significant and equal to 0.00006. And when we evaluate the other variables at the mean, we get that treated workers increased their probability of being absent from work by 3.9 percentage points compared to treated workers of conventional firms. A higher value than the 2.4 we got with our previous estimate. When we look at the results on absence duration reported in column (1) of Table A.1.1 the estimated coefficient of the interaction $D_i \times T_t \times Size_{jt} \times Age_{jt} \times Wage_{jt} \times Coop_{it}$ is 0.004. Meaning that (when size, age and wage are valuated at the mean) treated worker in cooperatives increased annual absence by 2.6 days more than worker in conventional firms.

5 Mechanisms

5.1 Short-term vs. long-term absenteeism

The Uruguayan sick leave insurance system does not make any distinction between short- and long-term absences in terms of replacement rates and funding. However, the distinction might be important to understand the underlying mechanisms behind the differential response of individuals employed in worker cooperatives. Assuming that individuals on long-term sick leave are more prone to be seriously sick, it has been argued that standard labour supply responses driven by moral hazard might be more relevant for short-term rather than for long-term sickness absence. Following Ziebarth 2013, we define sickness spells of more than 6 weeks as long-term absences. In our sample, long-term absences account for 54% of all absence days although they only represent 21% of all sickness cases.

In columns (1) and (2) of Table 6, we display estimates of equation (2) of the incidence of sickness absence for short- and long-term sickness spells, respectively. Results reported in column (1) indicate that the incidence of short-term absences for treated individuals employed in worker cooperatives increased by 1.8 percentage points relative to treated workers employed in conventional firms and individuals of the control group. Interestingly, the response of long-term absences in worker cooperatives is not significantly different from zero. This suggests the standard moral hazard argument is relevant to

explain the increase in workplace absences in worker cooperatives after the reform.

5.2 Members vs. employees in worker cooperatives

As explained in section 2.2, worker cooperatives can also hire employees at market wages as do conventional firms. The distinction between members and employees in worker cooperatives is relevant in our context given the different incentive structure faced by the two types of workers, which in turn may affect their responses to the paid sick leave reform. In contrast to members, hired workers in cooperatives do not participate in strategic managerial decisions and do not have an ownership stake in the firm. Therefore, one could hypothesise that members and hired employees in worker cooperatives face different labour discipline environments. For instance, the threat of dismissal due to unsatisfactory job performance may be less credible in the case of members.

In columns (3) and (5) of Table 6, we report DID estimates comparing individuals employed in conventional firms and members of worker cooperatives, while columns (4) and (6) display estimates only considering employees in worker cooperatives. In the case of the incidence of sickness absences, the differential response of treated individuals employed in worker cooperatives is observed for both members and employees. However, the differential aggregate response in terms of duration is entirely driven by cooperative members who significantly increased annual absences by 3 days relative to the other groups.

5.3 Collusive behaviour

In European paid sick leave insurance schemes, employers typically provide paid sick leave for short-term absences, while a public health insurance system funded from general taxation compensates employees for long-term sickness absences. In the case of Uruguay, employers do not make any disbursement. Wage losses due to sickness absences of more than 3 days are compensated by a public insurance scheme funded out of social security contributions and general taxes. In certain circumstances, this design feature of the Uruguayan sick leave insurance system may create opportunities for gaming the system, favouring employer-employee collusive behaviour. Firms may temporarily use the sickness insurance as a labour cost subsidy in order to weather seasonal demand fluctuations and economic hardships. One could argue that collusive behaviour is more likely to occur in worker cooperatives than in conventional firms given the alignment of worker and firm interests, particularly in the case of members. While direct evidence of collusive behaviour is hard to obtain, we investigate whether treatment effects vary according to the performance of the firm in which the individual is employed.

We estimate equation (2) for worker cooperatives and conventional firms separately, allowing the treatment effect to vary according to the firm-level average wage growth.

Of course, the correlation between wage growth and absence behaviour may simply reflect the existence of a feedback loop between productivity and absenteeism. However, a differential response of treated individuals in low-wage-growth firms relative to high-wage-growth firms after the reform may be consistent with firm-employee collusive practices. In columns 1-3 of Table 7, we report the estimates considering the probability of being absent from work as the dependent variable. The coefficient associated with the interaction $D_i \times T_t \times WageGrowth$ is negative and significant for both individuals employed in worker cooperatives and conventional firms. This suggests absenteeism is higher among treated individuals employed in low-wage-growth firms relative to high-wage-growth firms. Interestingly, the effect is only significant at $p < 0.1$ when we restrict the sample to individuals employed in cooperatives.

If collusive behaviour explains part of the documented intensification of absence behaviour in cooperatives after the reform, it is natural to expect the effect would operate mainly through the behavior of treated members in low-wage-growth cooperatives. However, this is not case in our data: the interaction term becomes insignificant when we restrict the estimates to cooperative members. In columns 4-6, we show the results using duration as the dependent variable. The interaction is only significant when we restrict the analysis to individuals employed in conventional firms. Overall, the evidence supporting the idea that cooperative members are more prone to collude and game the sick leave insurance system is not convincing.

5.4 Extensive margin responses by disease-categories

In this section, we further investigate extensive margin responses of sickness absence to the paid sick leave reform by exploiting information on doctor-certified disease categories. Using medical diagnosis classified according to the International Classification of Diseases (ICD), we analyse six broad categories of diseases: musculoskeletal, infectious, respiratory¹⁶, mental, poisoning, and pregnancy complications. The anatomy of responses by certified disease categories may be informative of the underlying mechanisms behind individuals' behavioral responses in worker cooperatives. In particular, the comparison between labor supply adjustments for musculoskeletal (e.g. back pain) and infectious diseases has proved helpful in unpacking responses to paid sick leave in terms of shirking behavior and contagious presenteeism (Pichler and Ziebarth 2017).

Information on disease categories for each sickness spell is only available from 2010 onward. Hence, we redefine our treatment and control groups and compare the pre-reform (2011-2012) and post-reform period (2013), exploiting the increase in the benefit cap that came into force in January 2013. Table 8 displays our disease-specific DID estimates. We

¹⁶Respiratory diseases are part of a mixed category including both contagious and noncontagious diseases.

observe a differential increase in the incidence of musculoskeletal, respiratory, and mental diseases for treated individuals in worker cooperatives relative to the other groups.

An interesting pattern emerges when we run separate disease-specific DID regressions for short-term and long-term absences (Appendix Table A.1.2). Disease-specific short-term absences conform to the general pattern reported in Table 8. By contrast, the analysis of disease-specific DID estimates of long-term absences provides additional insights. While differences in terms of mental and respiratory diseases persist, the differential increase in the incidence of musculoskeletal diseases for treated individuals employed in cooperatives is no longer statistically significant. This reinforces the idea that short-run changes in musculoskeletal diseases mostly capture conventional labor supply responses to the increased generosity of paid sick leave.

5.5 Marginal utility of leisure: Monday effect and extended weekends absences

We further exploit the granularity of the data to see whether sickness absences in cooperatives are more frequent on days in which leisure may confer greater marginal utility. A crucial advantage of the data is that we know the precise start and end date of each sickness spell.¹⁷

As a first approximation, we investigate the existence of a "Monday effect." Figure 9 plots the distribution of sickness spells by day of first report.¹⁸ If the start of a sickness spell is randomly distributed over the week, one should expect 20% of them to start on Monday. We observe that an excess proportion (5%) of spells started on Mondays. The pattern appears to be very similar for individuals employed in cooperatives and conventional firms. In Table 9, we report additional DID estimates of the incidence of sickness spells by the day of first report. We do not observe a differential "Monday effect" for treated individuals employed in cooperatives compared to the other groups. Overall, there is no evidence of a differential increase in extended weekend absences (Monday/Friday) in cooperatives after the reform.

¹⁷Previous studies have followed different approaches. The existence of the so-called "Monday effect" has also been studied in the context of U.S. workers' compensation programs providing insurance against work-related injuries (Card and McCall 1996; Campolieti and Hyatt 2006). Böheim and Leoni 2019 analyse sickness absences on Mondays and Fridays which fall between a weekend and public holidays. They do not find evidence supporting the idea that absenteeism is higher on bridging days. Shi and Skuterud 2015 find that good weather conditions are associated with higher sickness absenteeism among indoor workers. Thoursie 2004 and Thoursie 2007 find that popular sport events and birthdays are associated with an increase in sickness absences for certain demographic groups (e.g. young male workers).

¹⁸In Appendix Figure A.1.1 and A.1.2, we report the distribution of sickness spells by disease categories and day of first report. One should expect the Monday effect to be greater for conditions that are easier to conceal (e.g. musculoskeletal diseases). However, no clear pattern is observed in the data.

5.6 Labor discipline

Finally, we investigate whether documented differences in absence behaviour between individuals employed in cooperatives and conventional firms could be explained by the use of more punitive labor discipline strategies in conventional firms. It is a well-established fact that worker cooperatives have more stable employment and destroy fewer jobs than conventional firms (Craig and Pencavel 1992; Pencavel, Pistaferri, and Schivardi 2006; Burdín and Dean 2009; Alves, Burdín, and Dean 2016). Union members are also less likely to lose their jobs than non-members, which, in turn, may explain why they react more strongly to variations in paid sick leave (Goerke and Pannenberg 2011; Goerke and Pannenberg 2015). It is natural to think that a similar mechanism could be at work when employees have full bargaining power as in worker cooperatives.

We adopt a similar DID approach, comparing the evolution of dismissal rates between treated and control workers in both types of firms before and after the increase in sick leave pay. We identified dismissed individuals in each month by relying on both administrative information on the cause of separation (i.e. dismissal) and whether the individual was receiving unemployment benefits. In this way, we are able to restrict the analysis to layoffs, excluding other types of separations (voluntary terminations, retirement, etc.).

Table 10 shows estimates of equation (2) in which the dependent variable is a dummy indicating that a worker has been fired in the respective month. Our preferred estimates reported in column (4) indicate that the probability of being individually dismissed is 0.004 percentage points higher among treated workers employed in conventional firms in comparison to treated workers employed in cooperatives and relative to the control group. Considering the average pre-reform dismissal rate (1%), the magnitude of the effect is large.

Figure 10 reports the results from an event-study analysis in which we track the evolution of dismissal rates over the years around the paid sick leave reform. Each estimated coefficient corresponds to the interaction between $T_t \times ConventionalFirm_{it}$ and a full set of year dummies, where the coefficient for 2010 is normalized to zero. We do not find evidence of differential trends in the likelihood of dismissal before 2011. The differential increase in dismissal rates for treated workers employed in conventional firms relative to cooperatives becomes positive and significant from 2011 onward.

This suggests that, in order to keep absenteeism in check, conventional firms relied on more punitive labor discipline enforcement strategies than did cooperatives and were more prone to put treated workers under threat of dismissal after the reform.

6 Discussion and conclusions

The literature on how paid sick leave affects absenteeism in different organizational settings remains scant. Using monthly employment history data matched with individual-level information on certified sick leave and exploiting an exogenous increase in the paid sick leave maximum cap in Uruguay, we compare the labor supply responses of individuals employed in worker cooperatives and in conventional firms. A worker cooperative constitutes a rather peculiar organizational setting in which worker-members have a stake in ownership and participate in managerial decisions.

We find that treated individuals employed in a worker cooperative increased their probability of being absent by 2 percentage points at least once in a calendar year and the annual duration of their sickness absence spells increased roughly 2 days longer relative to treated individuals employed in conventional firms and the control group. Compared to the pre-reform period, treated workers of worker cooperatives increased their sickness absences in the extensive and intensive margins by 14% and 26%, respectively. The pre-reform absence behaviour seems similar in control and treatment groups according to our placebo test. By excluding switching workers (between jobs and kind of firms), we ruled out confounding effects related with changes in the composition of control and treatment groups over time and non-random sorting into cooperatives. Additional robustness checks were made. Including organization-specific time trends in our estimates we dismiss the possibility that our results were explained by time-varying shocks affecting differently worker cooperatives and conventional firms. Using a balanced panel we control for workforce compositional changes in our sample. Adding worker individual fixed effects, we control for time-invariant unobserved heterogeneity in our DID model. By computing for each worker the increase in her sick leave pay over the whole post-reform lapse, we consider the treatment intensity (the differential impact the reform had over every worker). Resulting again that the behavioural response of individuals employed in cooperatives was stronger than of those who worked for conventional firms.

Our analysis doesn't allow us to confirm if the higher absenteeism among cooperative workers is caused by an excessive use of paid sickness leave by these workers (mostly driven by moral hazard problems), an insufficient use by workers in conventional firms (driven by the fear to be dismissed) or both. However, we consider different mechanisms that could explain the observed results. First, the different behaviour of treated workers in cooperatives is explained by short-term rather than by long-term absences. Suggesting the relevance of the standard moral hazard argument. Second, the response in the duration of sick leaves is entirely driven by cooperative members (no by its hired employees). Third, responses in disease-specific behaviour show a different increase in short-term absences related to hard-to-diagnose conditions for treated workers in cooperatives. This conditions are usually considered more prone to moral hazard problems. Altogether, our evidence

would indicate that conventional labour supply responses account for at least part of the increase in absenteeism among workers in cooperatives after the reform. Fourth, the evidence for conventional firms shows that these firms employ dismissals more frequently (compared to cooperatives) as a disciplinary tool to reduce the use of paid sick leaves by its workers.

It could be the case that sickness leave use in conventional firms is just appropriate and its disciplinary mechanisms are effectively keeping the moral hazard problem at check, while cooperatives are not being able to deal suitably with this problem. But being absent from work due to sick leave is costly for Uruguayan workers. They experience an average income loss of 51% per episode in 2015. The more frequent use of dismissals as disciplinary mechanism in conventional firms to keep absenteeism low impose an additional cost to its workers. It could also be the case that its employees are making an insufficient use of sick leaves, leading to potential contagious presenteeism problems. Further research is needed to disentangle if reality approaches to some of these two extremes or is located somewhere in the middle.

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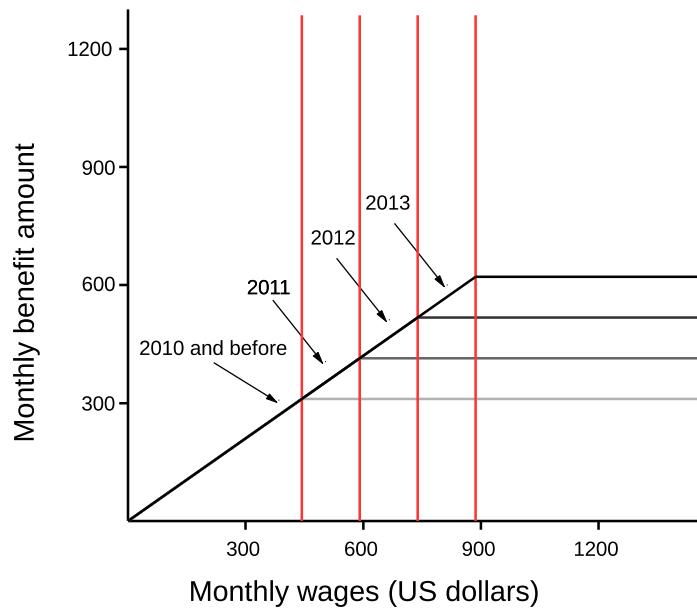
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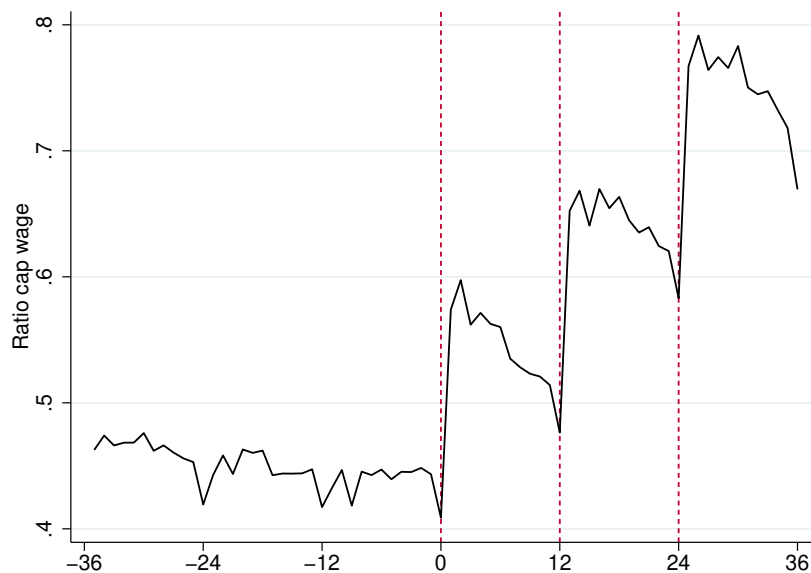
Figures and Tables

Figure 1: Paid sick leave schedule before and after the reform



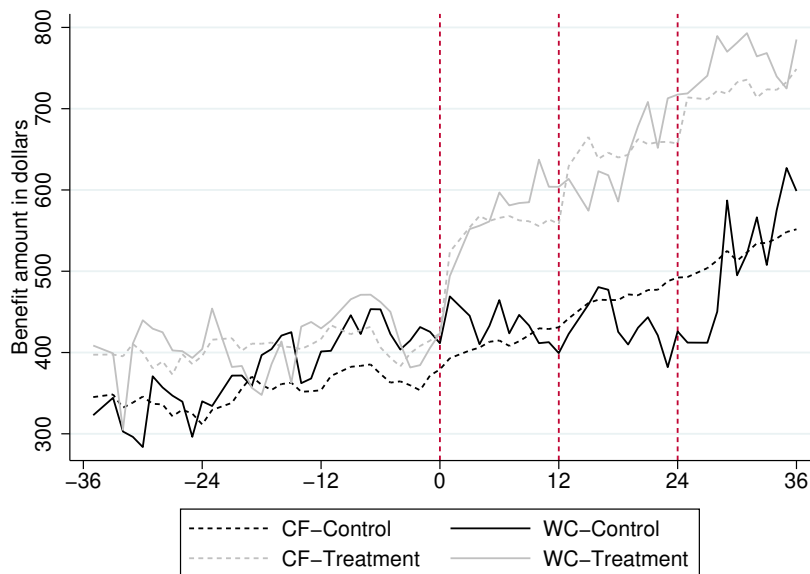
Notes: Authors' elaboration based on Uruguayan Social Security Agency (Banco de Prevision Social) and provisions of the Sick Leave Insurance Law 18725 (December 2010). The graph shows the evolution of the schedule of the paid sick leave monthly benefit amount in nominal terms (US dollars) as a kinked function of previous earnings in Uruguay. Changes in the maximum benefit amount also apply to the benefit amount of ongoing spells.

Figure 2: Ratio between paid sick leave benefit cap and average wage



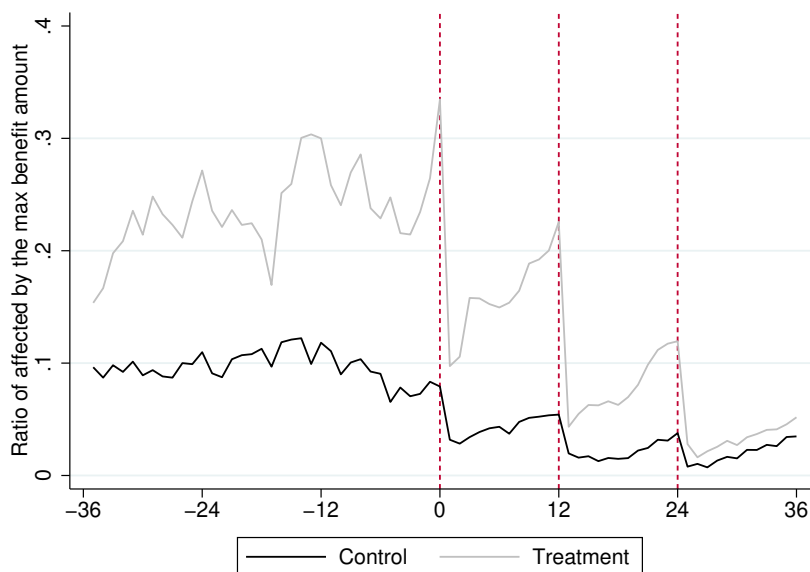
Notes: Authors' elaboration based on Uruguayan Social Security Agency (Banco de Prevision Social) and provisions of the Sick Leave Insurance Law 18725 (December 2010). The graph shows the evolution of the paid sick leave cap relative to the average wage.

Figure 3: Evolution of average paid sick leave by treatment status and organizational form



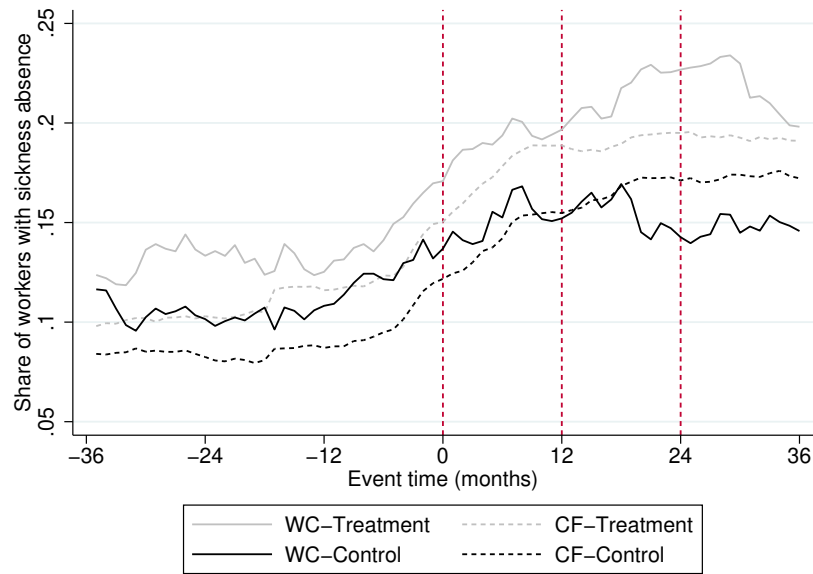
Notes: Authors' elaboration based on Uruguayan Social Security Agency (Banco de Prevision Social) and provisions of the Sick Leave Insurance Law 18725 (December 2010).

Figure 4: Ratio of workers affected by the benefit cap



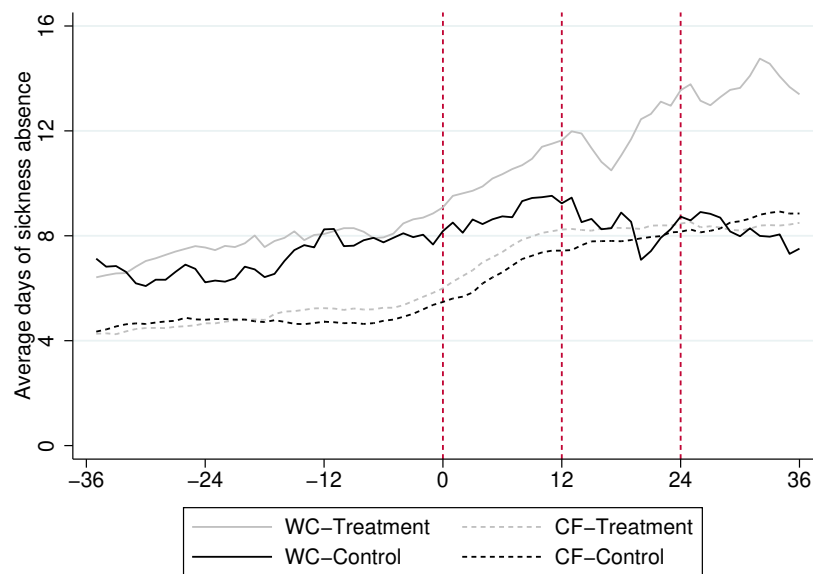
Notes: Authors' elaboration based on Uruguayan Social Security Agency (Banco de Prevision Social) and provisions of the Sick Leave Insurance Law 18725 (December 2010).

Figure 5: Share of workers with sickness absence in the last year



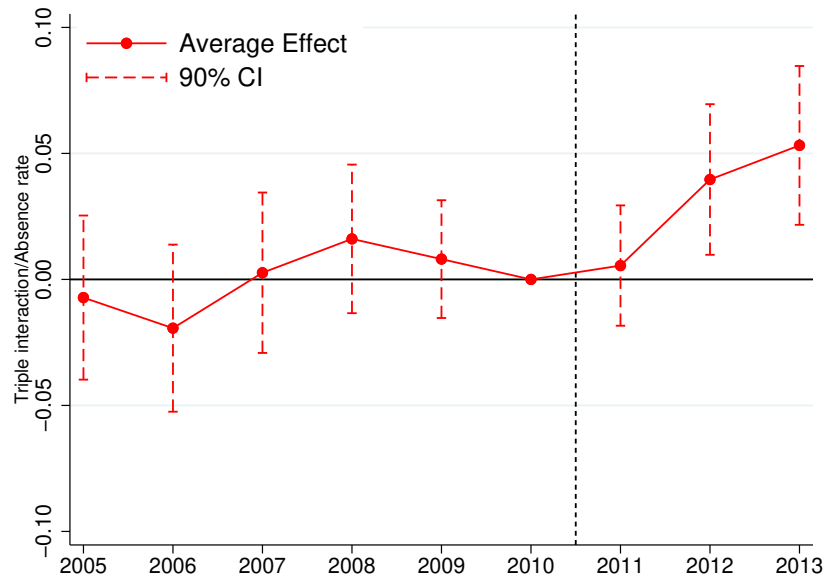
Notes: Authors' elaboration based on Uruguayan Social Security Agency (Banco de Prevision Social) and provisions of the Sick Leave Insurance Law 18725 (December 2010).

Figure 6: Average duration of sickness absence (in days)



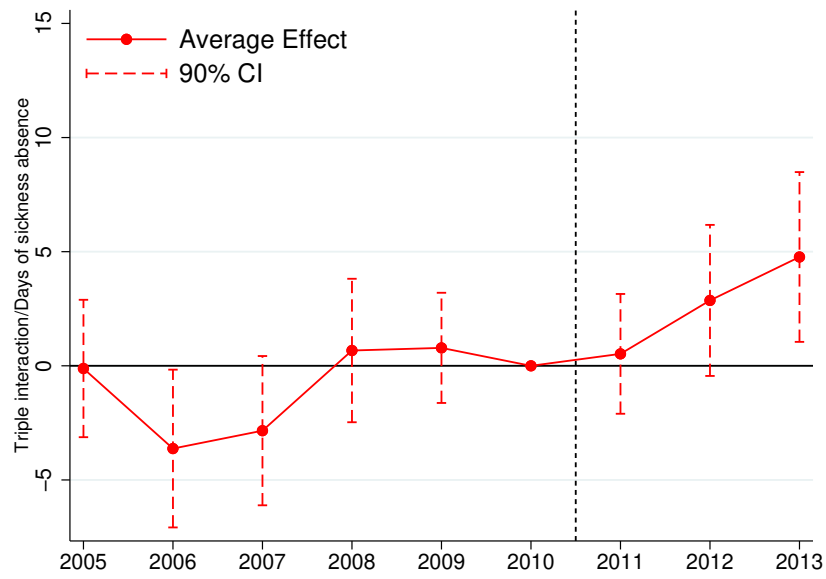
Notes: Authors' elaboration based on Uruguayan Social Security Agency (Banco de Prevision Social) and provisions of the Sick Leave Insurance Law 18725 (December 2010).

Figure 7: Event-study analysis: incidence of sickness-related absence



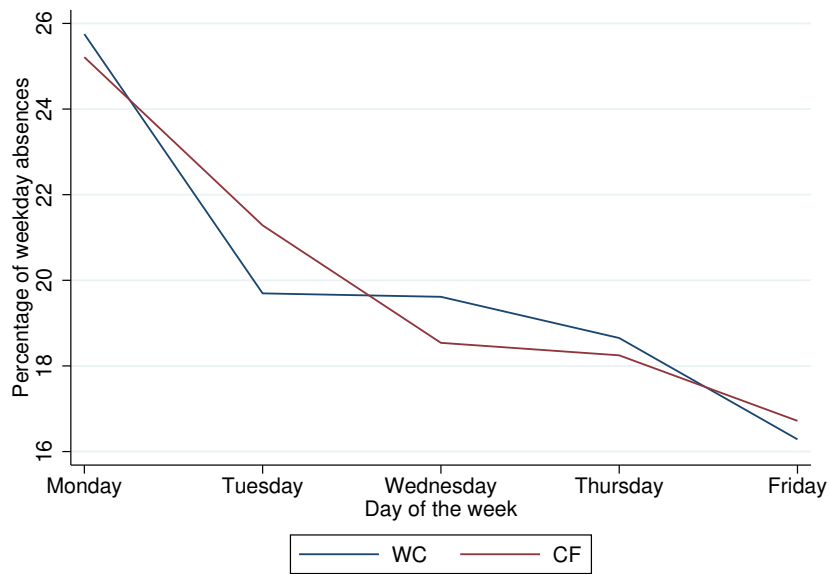
Notes: Authors' elaboration based on Uruguayan Social Security Agency (Banco de Prevision Social) and provisions of the Sick Leave Insurance Law 18725 (December 2010).

Figure 8: Event-study analysis: duration of sickness-related absence



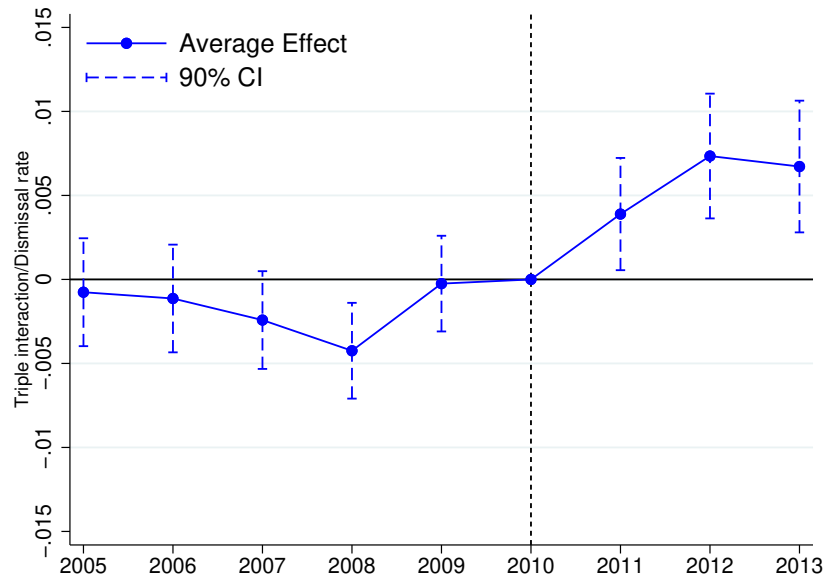
Notes: Authors' elaboration based on Uruguayan Social Security Agency (Banco de Prevision Social) and provisions of the Sick Leave Insurance Law 18725 (December 2010).

Figure 9: Distribution of sickness-related absence spells by day of first report



Notes: Authors' elaboration based on Uruguayan Social Security Agency (Banco de Prevision Social) and provisions of the Sick Leave Insurance Law 18725 (December 2010).

Figure 10: Event-study analysis: dismissals



Notes: Authors' elaboration based on Uruguayan Social Security Agency (Banco de Prevision Social) and provisions of the Sick Leave Insurance Law 18725 (December 2010).

Table 1: Descriptive statistics

	Pre-reform (2008-2010)				Post-reform (2011-2013)			
	Control		Treatment		Control		Treatment	
	CFs	Coops	CFs	Coops	CFs	Coops	CFs	Coops
Incidence	0.09	0.11	0.11	0.14	0.16	0.15	0.19	0.21
Duration	4.78	7.14	4.94	7.76	7.68	8.47	8.02	12.07
Age	36.28	41.45	37.06	46.15	37.62	42.56	39.21	46.86
% Male	0.47	0.44	0.63	0.79	0.48	0.46	0.63	0.75
Tenure (years)	2.97	3.94	4.47	4.96	3.64	4.56	5.62	6.36
Average salary of the firm (log)	2.25	2.04	2.87	2.75	2.62	2.42	3.16	3.01
Number of workers (log)	2.76	3.24	3.73	3.46	2.97	3.53	3.83	3.51
% Part-time worker	0.22	0.47	0.07	0.12	0.22	0.50	0.08	0.16
% Small firms	0.84	0.74	0.73	0.74	0.83	0.73	0.71	0.68
% Manufacturing	0.16	0.16	0.18	0.07	0.15	0.15	0.17	0.08
Average observations by month	18,888.00	700.33	16,445.67	987.33	20,377.00	674.00	15,651.67	941.67

Notes: Authors' elaboration based on Uruguayan Social Security Agency (Banco de Prevision Social).

Table 2: Incidence and duration of sickness-related absence: fixed-effects regressions

	Incidence of sickness-related absence			Duration (days)		
	(1)	(2)	(3)	(4)	(5)	(6)
Coop	0.040*** (0.013)	0.023* (0.013)	0.020 (0.013)	3.095*** (1.122)	2.845** (1.215)	2.678** (1.216)
Observations	2,987,831	2,615,967	2,615,967	2,987,831	2,615,967	2,615,967
R-squared	0.368	0.369	0.370	0.388	0.386	0.387
Individual's controls	No	Yes	Yes	No	Yes	Yes
Industry-specific time trends	No	No	Yes	No	No	Yes
Region-specific time trends	No	No	Yes	No	No	Yes

Notes: Individual-level controls include age, male, tenure, firm size (log of total employment), average firm wage (in logs), 9 industry dummies, 19 regional dummies ("Departamentos"). Standard errors clustered at the individual level are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 3: Difference-in-differences estimates

	Incidence of sickness-related absence				Duration (days)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment	-0.009*** (0.002)	-0.009*** (0.002)	-0.011*** (0.002)	-0.012*** (0.003)	-1.366*** (0.226)	-1.436*** (0.228)	-1.524*** (0.234)	-1.501*** (0.267)
Post-Reform \times Treatment	0.010*** (0.003)	0.010*** (0.003)	0.011*** (0.003)	0.008** (0.003)	0.709*** (0.259)	0.823*** (0.263)	0.912*** (0.267)	0.682** (0.308)
Post-Reform \times Treatment \times Coop	0.023*** (0.009)	0.028*** (0.009)	0.024** (0.009)	0.030*** (0.011)	2.712*** (1.037)	2.861*** (1.057)	2.319** (1.061)	2.803** (1.302)
Coop	0.017*** (0.005)	0.015*** (0.005)	0.014*** (0.005)	0.031*** (0.007)	1.391*** (0.520)	1.348*** (0.523)	1.108** (0.532)	2.291*** (0.727)
Observations	2,366,548	2,366,548	2,270,127	1,706,957	2,366,548	2,366,548	2,270,127	1,706,957
R-squared	0.069	0.070	0.070	0.065	0.031	0.031	0.033	0.030
Individual's controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-specific time trends	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Region-specific time trends	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Only workers aged 20-60 years	No	No	Yes	Yes	No	No	Yes	Yes
Only full-time workers	No	No	No	Yes	No	No	No	Yes

Notes: Difference-in-differences regressions comparing treatment and control individuals. Estimates reported in columns 3 and 6 are restricted to full-time workers. Coop equals 1 for individuals employed in a worker cooperative in a particular month and 0 otherwise. The post-reform variable equals 1 for years 2011-2013 (policy-on period) and 0 for years 2008-2010 (policy-off period). Individual-level controls include age, male, tenure, firm size (log of total employment), average firm wage (in logs), 9 industry dummies, 19 regional dummies ("Departamentos"). Standard errors clustered at the individual level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 4: Difference-in-differences estimates, excluding job switchers

	Excluding Coops-CFs switchers		Excluding any job switcher	
	(1)	(2)	(3)	(4)
	Incidence	Duration	Incidence	Duration
Post-Reform \times Treatment	0.004*** (0.001)	0.787*** (0.266)	0.005*** (0.002)	0.663 (0.481)
Post-Reform \times Treatment \times Coop	0.014*** (0.004)	3.238*** (1.248)	0.012** (0.005)	2.760* (1.465)
Observations	2,241,473	2,241,473	700,318	700,318
R-squared	0.026	0.031	0.028	0.035
Individual's controls	Yes	Yes	Yes	Yes
Industry-specific time trends	Yes	Yes	Yes	Yes
Region-specific time trends	Yes	Yes	Yes	Yes

Notes: Difference-in-differences regressions comparing treatment and control individuals. Estimates reported in columns 3 and 6 are restricted to full-time workers. Coop equals 1 for individuals employed in a worker cooperative in a particular month and 0 otherwise. The post-reform variable equals 1 for years 2011-2013 (policy-on period) and 0 for years 2008-2010 (policy-off period). Individual-level controls include age, male, tenure, firm size (log of total employment), average firm wage (in logs), 9 industry dummies, 19 regional dummies ("Departamentos"). Standard errors clustered at the individual level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 5: Robustness checks: second-level interactions, balanced panel, individual FE, and treatment intensity

	Unbalanced panel		Balanced panel		Individual fixed effects		Treatment intensity	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Incidence	Duration	Incidence	Duration	Incidence	Duration	Incidence	Duration
Post-Reform \times Treatment	0.010*** (0.003)	0.850*** (0.263)	0.018*** (0.004)	1.098*** (0.338)	-0.001 (0.003)	-0.347 (0.279)		
Post-Reform \times Treatment \times Coop	0.033** (0.013)	2.919* (1.539)	0.018 (0.018)	3.955* (2.175)	0.045*** (0.014)	2.940* (1.756)		
Post-Reform \times Treatment Intensity							0.037*** (0.013)	3.120*** (1.151)
Post-Reform \times Treatment Intensity \times Coop							0.097* (0.055)	9.878* (5.897)
Observations	2,366,548	2,366,548	907,798	907,798	2,049,189	2,049,189	2,366,548	2,366,548
R-squared	0.070	0.031	0.074	0.033	0.412	0.455	0.070	0.031
Individual's controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Difference-in-differences regressions comparing treatment and control individuals and including the full set of second-level interaction terms. In columns 3-4, we restrict the analysis to the balanced panel (individuals with continuous work history 24 month before-after January 2011). In column 5-6, we report estimates including individual fixed effects. In column 7-8, we report estimates including treatment intensity indicator instead of a binary one. Coop equals 1 for individuals employed in a worker cooperative in a particular month and 0 otherwise. The post-reform variable equals 1 for years 2011-2013 (policy-on period) and 0 for years 2008-2010 (policy-off period). Individual-level controls include age, male, tenure, firm size (log of total employment), average firm wage (in logs), 9 industry dummies, 19 regional dummies ("Departamentos"). Standard errors clustered at the individual level are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Heterogeneous effects and mechanisms: short-term vs. long-term absences, members vs. employees

	Incidence		Incidence		Duration	
	(1)	(2)	(3)	(4)	(5)	(6)
	Short-term absences	Long-term absences (>6 weeks)	Only members in worker coops	Only hired workers in worker coops	Only members in worker coops	Only hired workers in worker coops
Post-Reform x Treatment	0.007*** (0.003)	0.004*** (0.001)	0.007** (0.003)	0.006** (0.003)	0.703** (0.285)	0.681** (0.285)
Post-Reform x Treatment x Coop	0.018** (0.008)	0.007 (0.005)	0.026** (0.010)	0.037* (0.019)	3.175*** (1.170)	0.479 (2.429)
Observations	2,366,548	2,366,548	2,132,335	2,056,824	2,132,335	2,056,824
R-squared	0.060	0.019	0.065	0.066	0.030	0.031
Individual's controls	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Region-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Difference-in-differences regressions comparing treatment and control individuals. The coefficients correspond to the regression in Equation 1 estimated as a Linear Probability Model (columns 1-4) or OLS (columns 5-6). Coop equals 1 for individuals employed in a worker cooperative in a particular month and 0 otherwise. The post-reform variable equals 1 for years 2011-2013 (policy-on period) and 0 for years 2008-2010 (policy-off period). Individual-level controls include age, male, tenure, firm size (log of total employment), average firm wage (in logs), 9 industry dummies, 19 regional dummies ("Departamentos"). Standard errors clustered at the individual level are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7: Heterogeneous effects and mechanisms: high-wage-growth vs. low-wage-growth firms

	Incidence of sickness-related absence			Duration		
	(1)	(2)	(3)	(4)	(5)	(6)
	WCs	WCs (only members)	CFs	WCs	WCs (only members)	CFs
Post-Reform \times Treatment	0.043*** (0.016)	0.048*** (0.018)	0.011*** (0.003)	3.171 (1.932)	4.802** (2.085)	0.920*** (0.266)
Post-Reform \times Treatment \times Wage growth	-0.018* (0.010)	-0.012 (0.010)	-0.008*** (0.002)	0.943 (1.514)	1.644 (1.658)	-0.576*** (0.117)
Observations	115,160	93,817	2,174,442	115,160	93,817	2,174,442
R-squared	0.062	0.061	0.078	0.028	0.030	0.035
Individual's controls	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Region-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Difference-in-differences regressions comparing treatment and control individuals. Coop equals 1 for individuals employed in a worker cooperative in a particular month and 0 otherwise. The post-reform variable equals 1 for years 2011-2013 (policy-on period) and 0 for years 2008-2010 (policy-off period). Individual-level controls include age, male, tenure, firm size (log of total employment), average firm wage (in logs), 9 industry dummies, 19 regional dummies ("Departamentos"). Standard errors clustered at the individual level are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 8: Difference-in-differences estimates: incidence of sickness absence by disease categories

	(1)	(2)	(3)	(4)	(5)	(6)
	Musculoskeletal	Infectious	Respiratory	Mental	Poisoning	Pregnancy complications
Post-Reform \times Treatment	0.010*** (0.003)	0.007*** (0.002)	0.006** (0.002)	0.002 (0.001)	0.002 (0.002)	0.016*** (0.004)
Post-Reform \times Treatment \times Coop	0.013* (0.007)	-0.001 (0.005)	0.014* (0.007)	0.012** (0.005)	-0.003 (0.006)	-0.013 (0.018)
Observations	761,275	738,910	762,554	734,645	746,570	223,931
R-squared	0.036	0.016	0.030	0.013	0.012	0.018
Individual's controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Difference-in-differences regressions comparing treatment and control individuals. The coefficients correspond to the regression in Equation 1 estimated as a Linear Probability Model. Estimates reported in columns 6 restricted to female workers. Coop equals 1 for individuals employed in a worker cooperative in a particular month and 0 otherwise. The post-reform variable equals 1 for 2013 (policy-on period) and 0 for years 2011-2012 (policy-off period). Individual-level controls include age, male, tenure, firm size (log of total employment), average firm wage (in logs), 9 industry dummies, 19 regional dummies ("Departamentos"). Standard errors clustered at the individual level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 9: Difference-in-differences estimates: day of first report

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Monday	Tuesday	Wednesday	Thursday	Friday	Monday-Friday	Tuesday-Thursday
Post-Reform \times Treatment	0.008*** (0.002)	0.004* (0.002)	0.001 (0.002)	0.004* (0.002)	0.005** (0.002)	0.011*** (0.003)	0.006* (0.003)
Post-Reform \times Treatment \times Coop	0.011 (0.007)	0.010 (0.006)	0.011* (0.006)	0.009* (0.006)	0.005 (0.006)	0.012 (0.008)	0.022** (0.009)
Observations	870,276	870,276	870,276	870,276	870,276	870,276	870,276
R-squared	0.020	0.015	0.016	0.016	0.015	0.032	0.039
Individual's controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Difference-in-differences regressions comparing treatment and control individuals. The coefficients correspond to the regression in Equation 1 estimated as a Linear Probability Model. Estimates reported in columns 6 restricted to female workers. Coop equals 1 for individuals employed in a worker cooperative in a particular month and 0 otherwise. The post-reform variable equals 1 for 2013 (policy-on period) and 0 for years 2011-2012 (policy-off period). Individual-level controls include age, male, tenure, firm size (log of total employment), average firm wage (in logs), 9 industry dummies, 19 regional dummies ("Departamentos"). Standard errors clustered at the individual level are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 10: Difference-in-differences estimates: probability of being dismissed

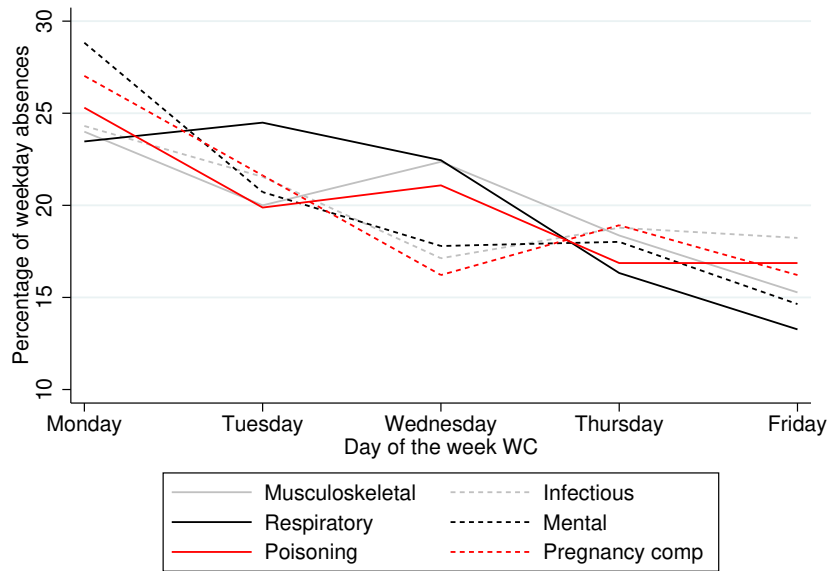
	(1)	(2)	(3)	(4)
Treatment	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)
Post-Reform \times Treatment	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Post-Reform \times Treatment \times Coop	-0.002** (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.002** (0.001)
Coop	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.003*** (0.001)
Observations	2,335,194	2,335,194	2,240,023	1,683,907
R-squared	0.006	0.007	0.007	0.007
Individual's controls	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Industry-specific time trends	No	Yes	Yes	Yes
Region-specific time trends	No	Yes	Yes	Yes
Only workers aged 20-60 years	No	No	Yes	Yes
Only full-time workers	No	No	No	Yes

Notes: Difference-in-differences regressions comparing treatment and control individuals. The coefficients correspond to the regression in Equation 1 estimated as a Linear Probability Model. Estimates reported in columns 6 restricted to female workers. Coop equals 1 for individuals employed in a worker cooperative in a particular month and 0 otherwise. The post-reform variable equals 1 for 2013 (policy-on period) and 0 for years 2011-2012 (policy-off period). Individual-level controls include age, male, tenure, firm size (log of total employment), average firm wage (in logs), 9 industry dummies, 19 regional dummies ("Departamentos"). Standard errors clustered at the individual level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

APPENDIX

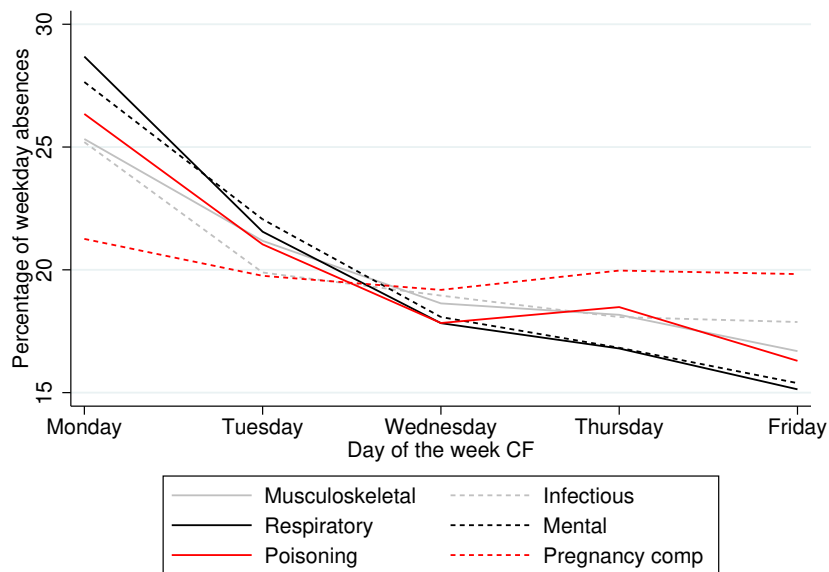
A.1 Additional Results: Figures and Tables

Figure A.1.1: Distribution of sickness-related absence spells by day of first report and disease category (Worker Cooperatives)



Notes: Authors' elaboration based on Uruguayan Social Security Agency (Banco de Prevision Social) and provisions of the Sick Leave Insurance Law 18725 (December 2010).

Figure A.1.2: Distribution of sickness-related absence spells by day of first report and disease category (Conventional firms)



Notes: Authors' elaboration based on Uruguayan Social Security Agency (Banco de Prevision Social) and provisions of the Sick Leave Insurance Law 18725 (December 2010).

Table A.1.1: Robustness checks: firm characteristics interactions

	Incidence of sickness-related absence				Duration (days)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Coop	0.014*** (0.005)	0.013** (0.005)	0.014*** (0.005)	0.014*** (0.005)	1.076** (0.520)	1.181** (0.527)	1.159** (0.502)	1.101** (0.501)
Treatment	-0.011*** (0.002)	-0.013*** (0.002)	-0.013*** (0.002)	-0.013*** (0.002)	-1.445*** (0.228)	-1.635*** (0.233)	-1.615*** (0.235)	-1.614*** (0.235)
Post-Reform × Treatment	0.011*** (0.003)	0.068*** (0.012)	0.165*** (0.022)	0.377*** (0.094)	0.871*** (0.262)	6.522*** (1.196)	9.734*** (2.224)	34.645*** (9.456)
Post-Reform × Treatment × Coop	0.024** (0.009)				2.243** (1.043)			
Post-Reform × Treatment x Wage x Coop		0.009*** (0.003)				0.595* (0.323)		
Post-Reform × Treatment x Wage x Size x Coop			0.002** (0.001)				0.173* (0.097)	
Post-Reform × Treatment x Wage x Size × Age x Coop				0.000*** (0.000)				0.004* (0.002)
Observations	2,270,127	2,270,127	2,270,127	2,270,127	2,270,127	2,270,127	2,270,127	2,270,127
R-squared	0.070	0.070	0.070	0.070	0.029	0.030	0.030	0.030
Individual's controls	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Only full-time workers aged 20-60 years	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Difference-in-differences regressions comparing treatment and control individuals. Estimates reported are restricted to full-time workers. Coop equals 1 for individuals employed in a worker cooperative in a particular month and 0 otherwise. The post-reform variable equals 1 for years 2011-2013 (policy-on period) and 0 for years 2008-2010 (policy-off period). Individual-level controls include age, male, tenure, firm size (log of total employment), average firm wage (in logs), 9 industry dummies, 19 regional dummies ("Departamentos"). Incrementally included variables not reported in Table A.1.1: $D_i \times T_t \times Wage_{jt}$ in columns (2) and (6); $D_i \times T_t \times Wage_{jt}$, $D_i \times T_t \times Size_{jt}$ and $D_i \times T_t \times Wage_{jt} \times Size_{jt}$ in columns (3) and (7); $D_i \times T_t \times Age_{jt}$, $D_i \times T_t \times Wage_{jt} \times Age_{jt}$, $D_i \times T_t \times Size_{jt} \times Age_{jt}$ and $D_i \times T_t \times Wage_{jt} \times Size_{jt} \times Age_{jt}$ in columns (4) and (8). Standard errors clustered at the individual level are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.1.2: Difference-in-differences estimates: incidence of sickness absence by disease categories. Short-term vs. long-term absences

	(1)	(2)	(3)	(4)	(5)	(6)
	Musculoskeletal	Infectious	Respiratory	Mental	Poisoning	Pregnancy complications
A) Short-term absences (<6 weeks)						
Post-Reform x Treatment	0.010*** (0.002)	0.006*** (0.002)	0.005** (0.002)	0.002 (0.001)	0.003 (0.002)	0.009*** (0.003)
Post-Reform x Treatment x Coop	0.012* (0.007)	-0.001 (0.004)	0.012* (0.007)	0.006 (0.004)	-0.004 (0.004)	0.004 (0.014)
Observations	783,800	766,076	789,266	761,003	769,839	230,821
R-squared	0.033	0.014	0.026	0.009	0.011	0.012
B) Long-term absences (>6 weeks)						
Post-Reform x Treatment	0.009*** (0.002)	0.001*** (0.000)	-0.000 (0.001)	0.001 (0.001)	-0.000 (0.001)	0.009*** (0.002)
Post-Reform x Treatment x Coop	0.009 (0.006)	0.002 (0.002)	0.006*** (0.002)	0.009*** (0.003)	0.001 (0.002)	-0.010 (0.010)
Observations	848,164	841,732	843,262	843,024	845,428	260,632
R-squared	0.028	0.002	0.004	0.005	0.002	0.009

Notes: Difference-in-differences regressions comparing treatment and control individuals. The coefficients correspond to the regression in Equation 1 estimated as a Linear Probability Model. Estimates reported in columns 6 restricted to female workers. Coop equals 1 for individuals employed in a worker cooperative in a particular month and 0 otherwise. The post-reform variable equals 1 for 2013 (policy-on period) and 0 for years 2011-2012 (policy-off period). Individual-level controls include age, male, tenure, firm size (log of total employment), average firm wage (in logs), 9 industry dummies, 19 regional dummies ("Departamentos"). Standard errors clustered at the individual level are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1